WIN

Something Completely Different!

PAGE 82

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NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

THIS WEEK

AMIGA

A3000 price cut, A2000 upgrade and the first internal hard disk for the A500

ATARI

The 386 PC emulator for your ST is on its way

PC

The 386 SX laptop for less than £2000... **Plus**...Z88 link pack launched

MACINTOSH

The smartest scanner yet? **Plus**... Compatibility problems with new machines

THE FASTEST COMPUTER EVER MADE

The machine that makes the Cray obsolete – all its unbelievable specifications on page 7

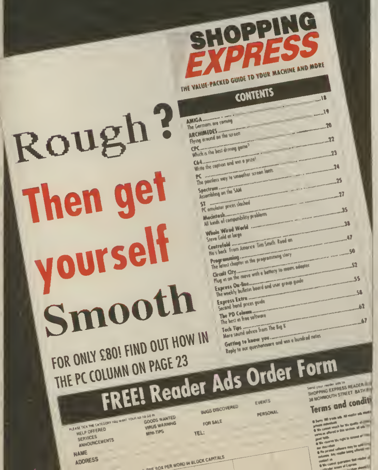
HAND-HELDS HEAD-TO-HEAD

NEC
Express
GAME GEAR
SEGA

Sega's GameGear and NEC's PC Engine

Need a cheap PC? NINE emulators evaluated

PLUS 52 PAGES OF BARGAINS



SHOPPING EXPRESS

THE VALUE-PACKED GUIDE TO YOUR MACHINE AND MORE

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HARD DISK DRIVES

What are they and do you really need one for your computer?

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frontend

edited by Colin Campbell

LYNX DIPS

Atari has slashed the price of its handheld Lynx games machine by £50 to £130, slap bang in the middle of the year's prime selling season.

The move is being seen as proof that the firm overpriced its remarkable colour machine at launch, and that buyers are not prepared to pay £180 for a handheld games machine – no matter how good it may be.

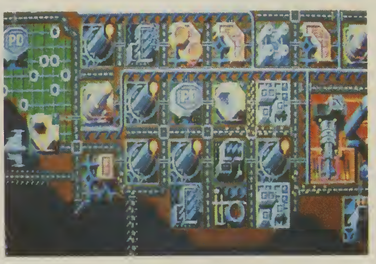
Atari is spending millions of pounds advertising the stereo pocket arcade system on television, and youngsters are clearly hooked by the machine's capabilities. But, in the current economic blizzard, parents are finding it difficult to justify the asking price – especially as a mono handheld from Nintendo costs less than half the price.

Atari privately feels it is promoting its superior product to the advantage of Nintendo.

The timing of the price cut is remarkable, even for unpredictable Atari. Pricing policy for the Christmas period is usually set in the summer, and deviancy is a rarity.

Clearly, youngsters who own Atari Lynx machines will find themselves popular in the playgrounds in the new term. Atari is hoping that its drastic manoeuvre will convince parents that the Lynx is a realistic Christmas treat.

Game hits town



Remember the incredibly addictive metropolis construction game *Sim City*? Now publisher Infogrammes is plotting to hook yet more people with a sequel, due to be launched late next year.

According to the firm's marketing manager Dominique Cor, *Sim City II* will be "more precise, powerful and colourful" than the original. The "completely new" title is being built by French development team Maxis.

Sim City allows you to build a city from scratch and organise leisure and transport facilities. The challenge, is to make the city attractive enough for inhabitants and profitable enough for business interests.

Sky high simulation

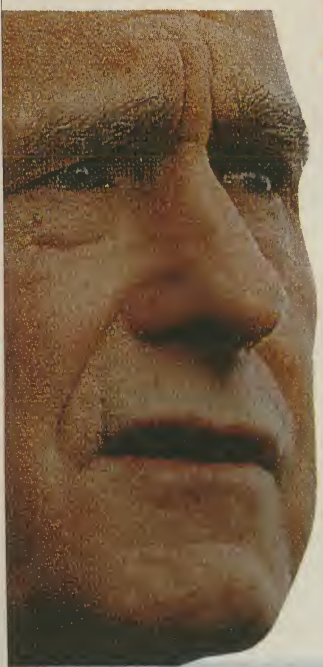
Would-be pilots with a PC can take to the simulated skies and learn flying skills on their computer, thanks to a new aircraft simulation package.

Bristol-based RC Simulation is preparing to launch a realistic flight program, with cockpit-style foot pedals and joystick, by mid-January.

To design the program the company drafted in an RAF pilot with 22 years of flying experience and it says the software could cut down flying time for learner pilots and give armchair users a taste of life at the flight control panel.

"It's more than just a game," said Bob Sidwick of RC Simulations. "The closest thing to it is simulation programs used by real pilots, but those have little entertainment value."

Bush chips in



Intel has received a National Medal of Technology from US president George Bush, for its work in the development of large scale integrated memories and microprocessors.

The Santa Clara based developer of the 386 and 486 chips was among eleven companies to receive the coveted awards.

Another computer related winner was Jack St Clair Kilby of Dallas, who made "significant improvements to the silicon thermal print head".

A Bush aide pontificated: "I join with all Americans in congratulating these people for their remarkable achievements which have so profoundly changed our world."

Computer cuts road deaths

While most areas of the country are continuing to experience an upturn in fatal traffic accidents, Suffolk has managed to reverse the trend.

The Suffolk Constabulary has enlisted a sophisticated computer analysis system which has helped reduce the road death rate by 24 per cent.

Suffolk police feed information of past accidents into the mainframe including day, place and time of crashes as well as the number of police in the area. The computer has picked out areas and crucial hours of the day when more patrols are needed.

This, in turn, has triggered a reduction in the incidence of drunk drivers, boy racers and other dangerous drivers.

DVI as easy as ABC

This family of funky tunesters, once famous for mad afro hairstyles and happy 70s fun, have swapped groovy tunes such as ABC for emerging computer technology like DVI.

Through its high-tech company Young Minds, the Jackson family has announced a joint agreement with two Californian firms heavily involved in Digital Video Integration and interactive multimedia. Young Minds, UVC and MTT Vizions are embarking on a project to create Virtual Reality games and interactive music videos compatible with the Nintendo Power Glove.

Representatives of the famous family were at the recent Comdex Show in Las Vegas to announce the joint project, and to make enthusiastic noises about emerging technologies.

Randy, who is vice president of Young Minds, was there along with Jackie, Tito, mum and dad. He hasn't lost the knack for coming out with fab lines – he said: "We're talking about putting full video and sound on a CD, along with text and graphics. Multimedia is no longer a dream, it's a vision. A dream is a fantasy, a vision comes true." Tra-la-la...

The idea is to create a technology which will allow people to "walk into a music video" using the Power Glove and ubiquitous VR goggles. The scheme is at an early stage, although the triumverate says it has developed software and a digital chip which will make these capabilities affordable for the home.

BIT BOPPER PUT ON ICE

Home computer owners eagerly awaiting a 16-bit version of the *Bit Bopper* graphics sound-to-light system will be disappointed to learn that the project has been mothballed.

Tecnation, which developed the amazing top-end system, says it has neither the time nor the money to concentrate on a home computer version. The company says it has more crucial plans which require attention.

Bit Bopper is a £40,000 system which uses audio information to drive visual effects. In this way music is transferred into graphical or even real video images. It has already been used to great effect by bands such as Public Enemy, Soul II Soul and Mantronix in live events.

Tecnation had hoped to offer home users a cut-down version for about £50, but it now says that such a program would cost too much in development and marketing costs.

Boss Alex Blok is working on a mysterious new hardware system which he claims will be of greater importance to computing than the launch of the Apple Mac. He commented: "My ambition has been to work on this computer since I was at college in the 1970s. It's a machine that will change people's lives. I think the technology has finally arrived."

He said he could not possibly spend time on a program for home computers, but hoped a heavyweight company would step in and license the *Bit Bopper* technology. "It would have to be someone like Amstrad to market such a program effectively," he said. ▨

Charity begins in homes

Owners of Acorn's Archimedes computer can help under-privileged youngsters get to grips with computers by buying a charity disk of neat Public Domain software launched this week.

The "Caring for Children" project is organised by Acorn employee Adrian Crichlow and Danny Williams from the Hawthorns Childrens Home in Cambridge.

They are hoping the proceeds will help kit out every kiddies home in East Anglia with an Archie.

It costs £5 and includes games and utilities written by Acorn employees in their spare time. There's a *Tetris* clone, a maze game, a ray traced Christmas backdrop, a text adventure, and loads of fun gadgets designed to put a smile on any child's face.

Adrian Crichlow told *Express:* "If we sell 2,500 programs then we can kit out 12 homes, and if it's a success we'll try and concentrate on a different area of the country next Christmas." Acorn will double whatever he raises.

Crichlow became involved because he runs a free computer tutorial for the Hawthorns kids. Most of the youngsters are not yet in foster schemes and are in the homes on a short-term basis.

Crichlow added: "Computers are good for children because it gives them a hobby and a distraction. It's something they can get involved in."

He said that the disk is well worth £5 of anyone's money. Send a cheque or postal order for £5 to The Christmas Disk Offer, PO Box 400, Cambridge. ▨

Information through power

You may be wondering just what business this curious contraption has in these pages? It is in fact a high-rise six-pack CD-ROM device made specifically for information chomping computer networks.

If members of a multi-user computer set up need to access similar data simlultaneously even the storage capabilities of a single CD-ROM may not be enough. With this in mind Cumana has launched the CDS-436 which can be configured to run on a PC network.

It takes about a third of a second to find a piece of information kept on any one of the CDs – and you can play audio CDs as well. All this costs a trifling £3,000. Heavy-duty users can call Cumana on 0483 503121. ▨

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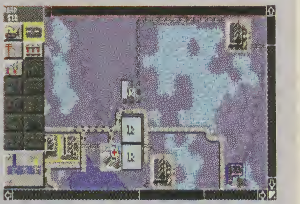

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PC Ditto - The ST software emulator in action (snail-style)

EMULATION E

With the announcement of a 386SX PC emulator for the ST, it would appear IBM clone wars are all set to invade new territory - the ST and Amiga markets. Keith Pomfret ditches TOS and AmigaDos to explore the mass of MS-DOS being made available.

The idea of emulation isn't new. Many years ago the super computer mainframes of the large corporations fought wars with big blue IBM.

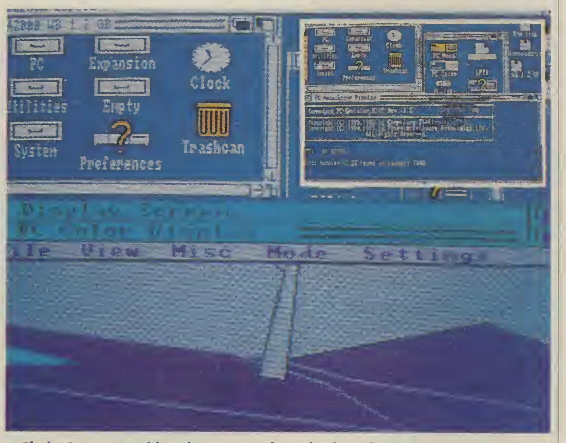
IBM established its own ponderous standard and forbade the addition of any software or peripherals that weren't its own. Before the lawsuits in the US, the only choice for the corporate computer user in the US was to stay with the up market high priced IBM upgrade path or go to alternative markets where smaller companies offered machines that could emulate IBM's ponderous and pedantic machinery.

Often the emulators were better specified than the machines they were copying and IBM fought tooth and nail through the courts to protect its monopoly.

After litigation came new laws and companies could make bolt-ons and upgrades for mainframes. This effectively killed the emulator market which went to sleep for thirty years to awake again in the late 1980s. Again the target was IBM, but this time the desktop replaced the air conditioned mainframe hall as the emulation arena.

The ST and the Amiga are well specified machines but with MS-DOS hogging the world serious software standard it was a case of even though you can beat 'em, you've still got to join 'em.

Every week we hear of a new emulator or upgrade for an existing emulator. It seems that everybody wants the power, games and graphics of the 68000 based machines with the ability to do serious PC things as well.



• Flight Sim or Workbench - you can have both with the A8088 Bridgeboard

UP FOR GRABS

The cheapest solution is always the software emulator. A disk (or disks) contain programs which make the ST or Amiga behave like a PC. The two best known are PC-Ditto for the ST and Transformer for the Amiga. Both run slowly and are fine as a method of putting the MS-DOS prompt on the screen to show that it can be done. Anything faster than a real time snail simulator is liable to have them puffing and panting and even curling up their toes.

The more expensive and more elegant solution is through hardware. A board contains all the processing power of a PC with all its associated circuitry and mates this with the input and output of the ST or Amiga in order to run a pseudo PC at a realistic speed.

user's guide
AMIGA
2088
BRIDGEBOARD
PC
GW-BASIC
English
PC
MS-DOS
English
Commodore

• A Bridge Too Near - The A2088 Commodore put in the Amiga 2000

The ST plays host to PC Speed, an IBM PC/XT board, AT Speed from the same manufacturer based on a 286 AT processor and the Vortex AT once board, again a PC AT board.

In Amiga land there are two separate 'divisions' – those which fit into an expansion slot in the 2000 series and above and those designed to squeeze into an A500.

Commodore started the ball rolling with its A2086 bridgeboard. This is essentially a full PC on a card and fits comfortably into a slot in an Amiga 2000. It is based on the PC/XT and introduced a lot of people to machine emulation. An AT bridgeboard followed and relatively high speed PC processing was possible on the high end Amigas. The A500 grew its first hardware emulator when Bitcon announced the KCS Power PC Board to fit in the memory expansion slot underneath. Just announced is the Amiga A500 version of the AT Once from German hardware specialist Vortex.

EXPANSION

One of the desirable features gained from owning a PC is its

Setting the standard

The emulators are claimed to be either XT or AT emulators. The IBM XT was a 8086/88 based PC with a hard disk drive. The IBM/AT was the first 80286 based IBM and also had a hard disk drive. The extensive cloning of the IBM standard has caused the definitions to become blurred.

Currently, anything running an 8086/88 series chip is known as an XT clone and anything running an 80286 is known as an AT clone. This isn't strictly accurate as the XT and AT specification demand hard disk storage.

To complicate matters, there are several display options for a PC. There is a text only screen made up purely fom characters in the ASCII set and the IBM extended set. Graphics screens come in several manifestations, but for the purpose of emulation, there are three. CGA, EGA and VGA. Most emulators are CGA (Colour Graphics Adapter) which is a pretty blocky four colour mode, but some emulators are now aspiring to the prettier and multi-colour EGA (Enhanced Graphics Adapter).

The light shining from the end of the display tunnel is VGA (Video Graphics Array) with its high resolution and well specified palette. No one has done it yet but at least one manufacturer claims that it will be with us in 1991.

Software v Hardware

There are two kinds of emulator – those based purely on software and those based on hardware, but needing software to run. No-one has yet perfected a bolt on (or in) that does the job automatically.

Software emulators are essentially a program that reconfigures the machine to behave like a PC. Because they have to overlay MS-DOS on an existing operating system they are slow and prone to crashes. They can only ever run 'well behaved' software that remains within the MS-DOS specifications. This leaves out most games which address the PC direct, taking short cuts past the operating system. The single advantage to software emulators is that they're cheap.

Hardware emulators are a set of chips on a board which duplicate a PC in its entirety. All the PC jobs are done on the board and only the input/output is handled by the ST or Amiga.

Hardware emulators generally run a good quantity of software and as they have a PC processor on board they can fair whizz along. As they amount to a PC on a card, they are expensive. The cost can be anything from £200 to a princely £700 or so for some of the whizzier bridgeboards for the top end Amigas.

Emulation or duplication?

There must be a point when emulation stops and duplication begins. If you built the internals of an ST, Amiga, PC and Arch into a workstation it would be duplicating rather than emulating.

In the true sense, emulation should mean using the existing machine to replicate another. This definition has been stretched to include those 'emulation' boards that do all of the operating system work and leave the host machine only the interfacing jobs.

EXPLOSION

POWER CARTRIDGE
Dos Help!
MS-DOS

• *An Amiga 500 with the KCS Power PC Board shows the unfriendlier face of MS-DOS*

expansion capability. Cards can be placed in expansion slots in a matter of a couple of minutes by a non-technical person and the system can easily be built up to the required specification. When an emulator card is added to an ST or Amiga, it brings with it all the hardware features of the PC, but there is no facility to add PC expansion cards. This leaves the ST/Amiga PC person with a bare PC able to run PC software, but losing out on the expansion capabilities of the PC.

It is possible to get a PC emulator in an Amiga B2000 to address on-board PC cards, but this is currently the exception rather than the rule.

COST

When the cheapest PC came in at well over £1,000, the ability to turn a home computer into a fully functioning PC would have been a financially wise as well as desirable option.

With companies selling fully functional off-the-shelf PCs for under £300, the financial wisdom isn't a factor and indeed many would say that a cheap £300 PC with its expansion capabilities would be a better bet.

Even the existing Amiga or ST owner couldn't upgrade their own machine to full PC status for that price and even if they could, they wouldn't have the expansion capability of the PC. An added advantage would be that having a PC and an Amiga or ST would mean that it would be possible to run both machines simultaneously, thus increasing productivity.

The problem of transferring data and work from one machine to the other could be solved by about £4 worth of PD comms disks and a null modem cable costing less than a fiver to make. The cost of buying a bare A500 Amiga and the cheapest PC would come to around £800 including a colour monitor for the Amiga. The 520 STFM solution would come in at about £720.

THE VERDICT?

Software emulators offer a considerable saving over buying an extra PC, but are only really good to prove that your machine can produce the elusive DOS prompt. The cheapest £200 hardware emulator would beat the combined machine price by about £100 in both cases. Some of the expensive ones would make it a more expensive proposition to emulate than to buy the machine that is being emulated.

But if the prices seem way too high why not settle for just a PC/AT 102 keyboard?

While the ST and Amiga keyboards are a close match, they aren't renowned for being the most pleasant to type on. Third party manufacturers and software developers have awoken to this and there are already a couple of ways around the problem for the ST.

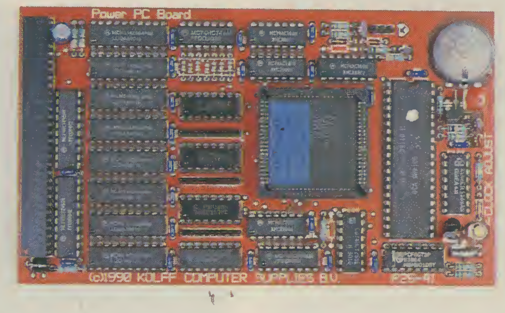
One solution is a software patch that allows a PC keyboard to be attached to the serial port of the ST. Dedicated PC keyboards for the ST and Amiga have been threatened but we haven't seen them yet.

It isn't only about cash though. There's a certain status attached to owning a computer with the power to do things hitherto only managed by other machines.

An Amiga running the PC version of *Autoroute* or an ST happily crunching numbers of a spreadsheet like *Lotus 1-2-3* is a desirable machine to own.

The mystique of persuading your machine to do something several miles above and beyond its brief is a situation that most serious ST and Amiga owners will aspire to.

In short, it's the current trend and, co-incidentally, it has practical uses too. Now there's a refreshing change! ■



• *The KCS Power PC Board. An XT sits in the memory slot underneath*

SuperCharger

• *Supercharger - a 286 AT emulator with a 386SX promised soon.*

Other machines

Crazy as it may seem the 8-bit Beeb Master can do a passable imitation of a PC. The Master 512 is a board that attaches to the Master and does wonderful PC type things via the Beebs I/O ports. The Archimedes has a software PC emulator that chugs along at a reasonable gait and is happy to run software that keeps the MS/DOS operating system rules. Serious software poses no problem to it and it becomes surprisingly fast when running on an upgraded Archie that has the ARM3 processor. This makes it the only software emulator to approach hardware speed.

Macintosh owners with a large lump of memory to spare and the desire to ditch friendly icons for the austere CLI can go for Soft-PC. ■

The Future

Hardware emulators have shown that it's possible to put an entire PC on a card. This being the case, it shouldn't be too difficult to put any machine on to a card. There could be a situation in the future where you go to a computer dealer, buy a generic computer I/O box and slot in cards of the machine of your choice. You might, for example, start with a bare box and add a PC, hard drive and a Spectrum console box for the kids.

A compatibility interface could make null modems and media problems a thing of the past and as your system grew you would be able to mix and match different machines to suit your requirements.

It may sound a little far fetched now, but who believed in a hand-held super computer a year ago? That arrived this year with the promise of a pocket mainframe by mid 1991. ■

Amiga Emulators

SOFTWARE ONLY :

The Transformer
Not widely available, slow and prone to crashes.
Performance ★

HARDWARE :

KCS Power PC Board.
This XT emulator slots straight into the memory expansion slot under an A500. Only the current version will support hard drives.
Performance ★★★

AT Once Amiga.
An AT on a board - it requires the machine to be opened up but twenty minutes should see the job done. An Amiga 2000 version due in 1991.
Performance ★★★★

A8088 Bridgeboard.
This was the one that started it all. The first XT board for an Amiga 2000. Won't run on an A500
Performance ★★★

Bridgeboard
The logical progression from the XT bridgeboard, this 80286 based AT board brought the Amiga 2000s into the serious PC processing world.
Performance ★★★★

ST Emulators

SOFTWARE ONLY :

PC Ditto.
A PC on a disk but like the Amiga Transformer, a little weak in the speed department.
Performance ★

HARDWARE

PC Speed
An XT hardware mod running much the same as a regulation IBM XT
Performance ★★

AT Speed
The big brother to the PC Speed with the power of a 286 based machine.
Performance ★★★

AT Once ST
This was the first AT Once board from German developer Vortex and offers quick 286 processing via an ST
Performance ★★★★

Australia wants you

Thinking of skipping off for a new life Down Under? It seems that the Aussies are more than keen for computer literates and computing professionals to leave blustery old Britain for the challenge of Oz.

The Australian Department of Immigration says the intake of computer professionals has risen by 71.4 per cent since 1986. Ten per cent of professionals who emigrate to Australia are involved in the computer industry.

The Department of Training and Education in Sydney has placed computer professionals at the top of its list of desirable workers. ▨

Special scanner

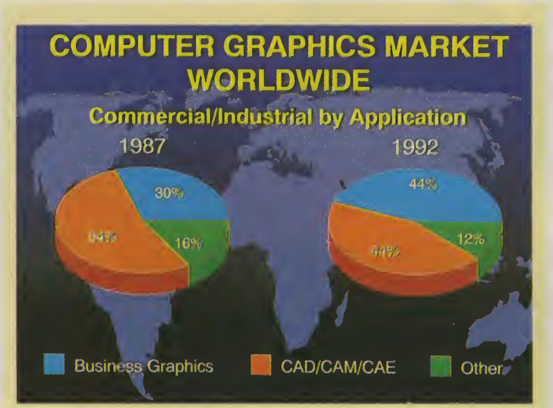
Typist: fast reader

Caere Corporation has launched its revolutionary 'Typist' Macintosh hand scanner in the UK. It's been a big hit in the US already and the press over here are already going bonkers.

The warm reception is mainly due to its ability to scan text into a document at the rate of 500 words per minute. That text can then be edited in the normal fashion.

"It sets a new standard for speed, ease-of-use, practicality and versality," enthused Caree's Larry Miller. "And its £600 price makes page recognition affordable for the first time."

It uses optical character recognition technology to read text regardless of the font style or the number of columns on a page. It scans at two inches per second which Caere claims is twice as fast as the competition. Call distributor Computers Unlimited on 081-200 8282. ▨



• Pixie: *turns figures into pictures*

Fun with figures

A Windows based graphical charting program has been launched which publisher BIT UK claims is "the most intuitive graphics application in Britain'.

Pixie 2.01, which retails at £239, allows users to represent any figures in a variety of chart forms. BIT says it's simple to use, produces pretty graphs, and is compatible with popular spreadsheets.

Call 0420 83811. ▨

Japs get tough with hackers

An upsurge in the Japanese computer crime rates have led to calls for harsh new penalties to be enforced against hackers.

If the Japan Information Processing Development Association gets its way, hackers will face sentences of up to one year's hard labour.

The IPDA is urging the Japanese Government to crack down on hackers who are wrecking computer networks just for fun. It wants to maintain "social faith" in the country's massive computer system.

The creation of computer viruses would also carry similar punishment as hacking.

A spokeswoman for the Japanese Embassy in London said that hard labour in Japan is "pretty tame" adding: "You know we're not talking about Siberia." ▨

• At a glance help from CDL

Commanding strokes

Anyone who has invested in a complex piece of software knows how long it can take to master all the commands and keystrokes required to get the most out of a program.

Help is at hand from Woking based CDL which has launched a new series of help cards for programs such as Lotus *Agenda*, Microsoft *Works 2.0*, *Paradox 3.0*, *Quattro Pro 1.0*, *WordPerfect 5.1* and *XYWrite III Plus*. .

Depending on the sophistication of the program being supported, the Keyboard Guidecard System provides one or two cards per product containing all the application's commands and keystrokes. There's also a blank DIY card for you to fill in as you explore an unsupported program.

Prices for the Guidecards start at £7.99. Call 0483 756813. ▨

Intel trounces the Japanese as it l

200,000 T
THAN TH

A computer capable of previously unthinkable speed, power and storage has been launched by Intel. The Delta System is based on a total of 528 i860 processors working concurrently to provide a peak speed of 32 billion floating point operations every second.

It beats the record held by the NCube 2 Scalar supercomputer for the past 18 months (*Express* 35) and, according to Intel, it provides twice the performance of Cray's top-end machine at "one tenth the price".

But Delta is merely a prototype for a monster of a machine which will effectively be nearly 2,000 times faster than the NCube 2. Due to be launched in the summer, the Sigma will consist of at least 2,048 processors and will be able to handle an astonishing 150 billion floating operations per second, or 100,000 million instructions per second (MIPS). The NCube runs at 60 million MIPS while a home computer, such as the Amiga or ST, can barely deliver one MIP.

It boasts a memory of 64 gigabytes, which equates to 64,000 Mb. There's also a storage capacity 0.5 terabytes available in what can loosely be described as a 500,000Mb hard disk.

In order to get a grip on what these figures mean, we compared the tech specs to those featured in various home computers.

SPEED

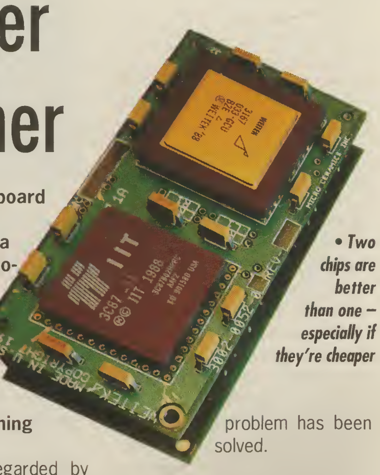
The i860 chips are extremely powerful as single units, but they are relatively inexpensive. It's possible to buy one as a booster chip for a cheap IBM compatible. A games console based on one of these chips would blow away anything in existence.

But the Sigma operates by linking all the chips up to 'work together'. Since Intel unveiled the first parallel supercomputer in 1985, concurrent supercomputers have overtaken traditional machines in speed and market share.

Compare the astronomical operating speed of 100,000 MIPS to the Amiga's 0.5 MIP mathematical power.

The Sigma is 200,000 times faster than an Amiga. If you laid 200,000 Amigas end to end they would reach from London to Cambridge. Put it another way, in Amiga terms, the Sigma would

Number cruncher



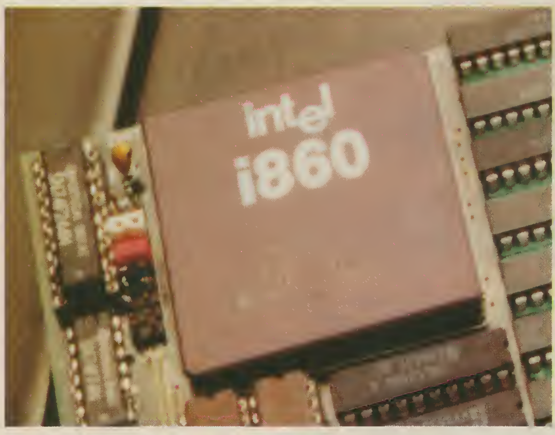
• Two chips are better than one – especially if they're cheaper

A Weitek daughter-board has been launched which incorporates a normal maths co-processor and the Weitek Abacus 3167 chip. It's being aimed at power PC users who need total number crunching ability.

The Abacus is regarded by many as the best number cruncher for 386 PCs, but it doesn't support all software packages. However, with the extra coprocessor on board this problem has been solved.

The basic package costs £550 – £250 less than the cost of the items bought separately. Weitek reckons the daughter board will e as it launches the most powerful super computer ever

0 TIMES FASTER THE AMIGA 500



• *2,048 of these, all working in unison, make up the speed of the most advanced computer yet devised.*

cover an area four times the size of Wembley stadium.

It could randomly generate fractal landscapes quickly enough to fly a 2,400 mph military flight simulator through it. So the landscape is created faster than the aircraft is moving.

If, in the game *Stunt Car Racer* the featured vehicle runs at 70 miles per hour, it would clock up 14,000,000 mph on the Sigma. Theoretically, your stunt car could zip around the circumference of the earth 300 times in half an hour. That is about one fiftieth of the speed of light.

MEMORY

With 64,000 Megabytes of RAM on board the Sigma is the equivalent to a quarter of a million Amstrad PCWs. Stacked on top of each other the machines would reach 48 miles into space – about eight and a half times the height of Mount Everest. It could run 150,000 different word processors simultaneously, or hold 500 million copies of *The Satanic Verses* as document files.

STORAGE

The 500,000Mb hard disk has the same storage capacity as 20,000 average hard drive PCs. That amount of kit would cost you £10 million (plus VAT).

Using Intel's own digital video compression techniques, the hard disk could store 555 Hollywood movies – enough to keep you in front a screen for an entire month.

PRICE

The processors alone are worth £28 million – the property value of a medium sized housing estate in Milton Keynes. However, as Intel manufactures all components itself, the price, which will be arranged on a made-to-measure basis, will be considerably cheaper.

Intel will be selling its machines to universities, governmental institutions, military installations and space exploration agencies.

They will be working on complex climatological modelling, satellite manoeuvring calculations and geological analysis.

The firm is confidently predicting that processing power will continue to double every year until the end of the decade.

MANDELBROT TEST

Readers of the original NCube story will remember our comparison between that machine's time to calculate the Mandelbrot equation – only a tenth of a second, compared to the six minutes for an Archimedes and 12 hours for a BBC.

To give a further idea of the Sigma's unbelievable speed, the machine could calculate over 1,600 Mandelbrot sets while the NCube was calculating one.

US BACK ON TOP

The recent war between supercomputer manufacturers had been slipping away from the Americans – towards the Japanese who had been drawing on established American technology. The latest innovations puts America back at the forefront of this leading edge technological market. ▩

CD ROM goes back to school

The entire 'A' level music syllabus will be brought to the computer screen with a product which aims to revolutionise music education.

US company Warner New Media's Auto Notes series is recording each piece of music covered by the UK 'A' level syllabus onto CD ROM discs. An interactive computer display will analyse the music, explain techniques and themes and allow the user to question, add comments, notes or lesson plans.

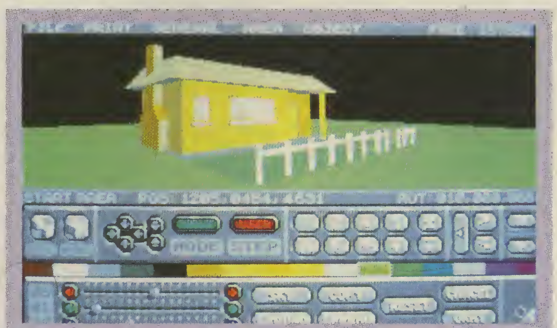
"There is a massive educational market for this product. Music is to become a core curriculum subject from the age of eleven," says UK distributor 2001 director Chris West.

"Tutors and educational establishments will find they need more material in order to cover the subject. The Auto Note series will educate from 11+ level."

Clwyd LEA is to provide the CD ROM discs to all schools in the area with access to a CD player. Advisory Teacher for Information Technology, Tudor Morris, says the product is vital to the future of music education.

"I see this being used not just for music but for the entire school. It provides an instant and easily accessible source of information allowing distance learning and a library resource.

"I have demonstrated the product which is running at the Educational College in Bryestyn to around 15 teachers. All have realised its importance and significance for the future." ▩

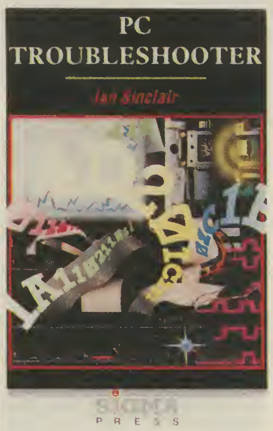


This is the first published screenshot of Domark's eagerly awaited 3D Construction Kit, due for launch in April.

It's been designed around the versatile *Freescape 2* environment utilised successfully in games such as Castle Master. But this program will allow you to build your own environment, be it a computer representation of the neighbourhood or a futuristic colony on Neptune.

After creating your own little world you can set about populating it, or even animating characters and objects. Domark is calling it "Lego blocks for adults" and, a little extravagantly, "your own Virtual Reality".

It's going to be launched on the ST, Amiga, PC, C64, Spectrum and CPC. If it's as good as we're being led to believe, it'll be one of the software events of 1991. ▩



• *Help at hand*

Looking for trouble

PCs are contrary at the best of times, and it's all too easy for even experienced MS-DOSers to find themselves baffled by faults, quirks and glitches.

If you want to get the upper hand over your IBM compatible it might be a good idea to check out Ian Sinclair's latest guide *PC Troubleshooter*.

Publisher Sigma Press reckons the book will help neluigered PC owners sort out any dificulties. It costs £12.95. Call 0243 770216. ▩

Return of the virus buster

Yet another virus-busting software package has been launched. This time it's *PC Immunise II* which, we are told, will handle all breeds of virus past present and future.

Sceptics should note that various techie magazines have been making enthusiastic noises about SA Software's latest. So if the thought of being hit by a virus has you reaching for a clean pair of trousers, call 081-998 2351. It costs £39.95. ▩

That Condor feeling

Atari ST owners are to be offered the chance to turn their machine into a 386sx PC.

The Condor SC Plus 386sx upgrade is just the latest emulator for the ST. But it offers full 386 compatibility by sharing the ST's ports. Reading based Condor claims the box will accept any expansion cards such as VGA, FAX or interface boards.

No prices have been fixed yet. Call 0734 810066. ▩

Ringing Robocop

• *Hello everybody, I'm the future of law enforcement.*

Veteran games publisher Gremlin Graphics has gone on-line with a new interactive telephone games based on metallic crime fighter *Robocop 2*.

Gremlin is calling its pay-as-you-play scheme an "interactive radio play" with plenty of villains and crooks for you to destroy. You play by making coded commands into the mouthpiece; for instance in one situation the number two will make Robocop fire a warning shot and approach on foot. The are scores to clock up, energy to save and all that kind of stuff.

It kicks off on December 14th and the number is 0898 345678. Calls are charged at a not inconsiderable rate of 33p per minute cheap rate and 44p per minute at other times – dearer than your average game.

Commodore looks again at its mid-range

CBM RETHIN

The future of the Amiga 3000 and A2000 were under considerable scrutiny last week as the Commodore Christmas Show ended.

Commodore has confirmed that it will be relaunching its mid-range Amiga 2000 next month, but says changes will be kept to a minimum.

And it has hinted that the A3000 will be substantially cut in price by the spring.

• Amiga 2000: It had been hoped that the machine would be upgraded to become a 'budget Amiga 3000', but the firm says it will only be offering the A2000 with a 40Mb hard disk as standard.

Prices currently start at £1,200, and that is likely to rise a few hundred pounds.

A Commodore spokesman offered: "We want to reposition the A2000 as an audio and graphics workstation, but the technical specifications will stay the same. We're not going to be changing the processor but we might throw in some software."

Many had predicted that the new generation A2000 would come with the 68020 processor instead of the slower 68000, as well as the Enhanced Chip Set featured in the impressive top-end Amiga 3000.

Commodore's unimaginative "repositioning" is bound to rankle with Amiga watchers, who had been hoping for something special.

• Amiga 3000: In the US, Commodore has announced that its A3000 with Unix will cost $4,000, about $1,000 less than a standard

NIBBLES

- If you think continental driving couldn't get any worse, you've a shock in store. A driving school in France has adapted Tengen's popular arcade hit *Hard Drivin'* to help people learning to drive.
- The Royal National Institute for the Blind has won the Social Benefit award in the British Computer Society's annual award, for its on-line *Guardian* newspaper service. The system allows the visually impaired to receive *The Guardian* onto a PC, where it can be printed in Braille.
- Don't forget the Windows Show due to be held at Olympia in London from Tuesday February 12th to Thursday the 14th. With the PC industry going Windows mad, you can be sure of a software feast.
- Next September's Consumer Electronics Show will be switched from grotty Earls Court to the much more acceptable Earls Court II venue.
- *Vector Championship Run* (a car racing game) is the first title to be launched on Zeppelin Games' new Impulze label. It's out on the ST and Amiga and costs £24.99.
- Budget games publisher CodeMasters has been blowing its own trumpet – not for the first time. Last week the firm were bragging about taking the top three positions in the Gallup top ten. *Guardian Angel*, *Quattro Adventure* and *Quattro Combat* topped the charts for one week. *Express* would like to point out they still owe us a tenner for the bet on the Christmas No.1.
- Art Systems will this week release a £195 CAD (computer-aided design) program for the PC. *The Boss* allows users to view, plot and manage *AutoCAD* drawings even when *AutoCAD* is not loaded on the system.

Cambridge seeks out micro owners for Z88

Cambridge Computer reckons desktop owners will be splashing out next year for one of its A4 sized Z88 machines.

The firm has just launched three new Z88 packs designed for three different sets of users.

• The Link-PC Pack allows Z88 buyers to connect to any IBM compatible and transfer files from one to the other either in ASCII or a selected software form. This is bound to appeal to PC owners who want a light portable for simple tasks such as word-processing.

As well as the machine the pack contains a 128K expansion pack, PC link software and cable, mains adapter and carry case and an extra 32K RAM pack and 32K EPROM. Batteries are included. It costs £269.

• The Link-Mac Pack is exactly the same as above, but is compatible with Apple's machine. The Apple connection has added an extra £30 to the above price.

• For first time users unworried by compatibility concerns there's the All-In-One Pack which features the machine with original built in software including word processor, spreadsheet and database.

BBC BASIC has been thrown in for the benefit of schools or beginners and there are all the extra RAM packs, carrying case and batteries. The pack costs £249.

Cambridge Computer's Roger Flack enthused: "The Z88 is a hot product and it's still outstripping sales forecasts."

• *Z88 pack: versatile computing.*

Big little drive from Japan

Mitsubishi, the world's largest manufacturer of floppy disk drives, has launched a 3.5-inch floppy drive for use in laptops and portables which can store a huge 2Mb of data on a disk.

The MF355S is a mere 17mm in height and 130mm deep and it weighs just 240 grammes. Mitsubishi says the device is not just thin, but also rugged. It can stand a 70G shock rate (70 times the force of gravity) and, according to the firm is "ideal for rough treatment".

The Japanese giant reckons manufacturers of portables will be queuing up to include the drive in forthcoming machines. It can read and write PC 3.5-inch disks.

• *Tough and tiny: Mitsubishi's driving for portables.*

IBM kits out college

IBM has donated nearly $1 million worth of computer equipment to a Canadian University, which needs the hardware for research into anything from the control of rabies to creating models of the human heart.

Queen's University in Ontario will be using PS/2 machines as well as a central RISC-based mini computer. One plan is to analyse the flight paths of airplanes which drop baits containing a vaccine to control the spread of rabies among foxes.

IBM Canada has been donating kit to universities for the past eight years. Big Blue, pragmatic as ever, says it's important to invest in education in order to aid the development of a well-trained work force.

Grand Finale

A cracking games compilation is due to be launched by Elite – but it marks the end of an era for the publisher.

Gamers have been tucking into Elite compilations for years, but now the firm says it wants to concentrate on developing new products. The last compendium, appropriately called *Finale*, features driving game *Overlander*, boy-on-bicycle classic *Paperboy*, *Ghosts 'n' Goblins* and arcade conversion *Space Harrier*. The PC version replaces *Overlander* with old thumper *Frank Bruno's Boxing*.

Finale marks Elite's 19th bargain bundle in the past two years; it should be in the shops next week on the ST, Amiga and PC for £24.95.

Amiga 2000 'graphics workstation'

KS AMIGAS

A3000. Naturally, this has sparked off speculation that the normal A3000 prices will be slashed – a Unix licence alone is costing Commodore a few hundred dollars for every machine.

An April launch date for the Unix machine has been pencilled in by Commodore UK, and some form of A3000 price cut will almost certainly be announced. If US pricing is followed, it will cost £2,000 here – the Amiga 3000 costs £3,000.

• Meanwhile, an internal hard drive for the Amiga 500 is to be launched into the UK. Bedford-based Power Computing says its hard disk is the first of its kind. A retail tag of £599 is being predicted when it arrives next year. ▨

• See the Commodore show report, below right

• Amiga 2000: changes due.

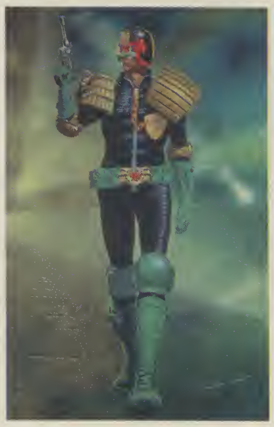
Dredd delayed

Virgin Games has delayed the launch of its *Judge Dredd* game until the new year.

The *2000AD* lawmaker was to be launched last week, but Virgin reckons there are too many games on the shelves this Christmas already. However, a spokeswoman said there had been a few minor technical problems which had hampered progress.

The game follows the exploits of the futuristic lawman in his fight against the perps. Screenshots show a regular-looking platform beat-'em-up, but Virgin is confident that the final version of the game will be anything but ordinary.

Versions are expected for the Amiga, ST and PC when the game eventually surfaces early on next year. ▨



• Judge Dredd: *late comer to avoid the Christmas rush.*

• Opus Laptop: 386 on the move.

Opus goes portable

Opus, one of Britain's few independent hardware manufacturers, has launched a £2,000 386SX portable.

The Opus Laptop has a clock speed of 16MHz with 1Mb of RAM expandable to 4Mb on the motherboard. It also features AT compatible 16-bit expansion slots.

Opus has slapped in a VGA chip to support a 640 x 480 10-inch plasma screen displaying 25 lines x 80 characters. It comes with a 3.5-inch floppy disk drive and a 40Mb hard disk.

It weighs 9kg, sports two serial ports and one parallel port. Call 0293 821444 for more information. ▨

AT in an Amiga

A 286 emulator for the Amiga has been launched by Silica Systems.

The Vortex ATonce-Amiga, which costs £249, is claimed to be the first emulator for the Amiga capable of multi-tasking. It will also address all the RAM in a machine — not just the standard 1Mb. Card adapters for the Amiga 1500, 2000 and 3000 are expected soon after Christmas offering the possibility of video and memory expansion.

The £249 price includes a copy of MS-DOS, although if you already own the operating system the price is only £199. ▨

A London gathering of the Commodore clans

This year's Commodore Christmas Show was the sixteenth of its kind in consecutive years, *writes Sean Masterson.*

Since 16 years ago the company was known for its high powered programmable calculators, having previously been somewhat less renowned for making typewriters, you have to acknowledge that Commodore has come a long way.

The fascination with these annual Novotel affairs was justified by one of the dealers who was going through his own annual ritual, that of box shifting. He observed that unlike the expensive Olympia and Earl's Court venues, razzmatazz is absent from CBM's Christmas bash. What you get instead, he claimed, is an unusual situation where those who are there as visitors have one thing in common – the fact that Commodore computers play a significant part in their lives.

Old timers ICPUG would have agreed. The ultimate user group for all things Commodore has been making its presence felt for years at these shows and this year they turned out with high morale and membership. However, they're no longer the only visibly active Commodore users. The heavyweight fanzine *Just Amiga Monthly* (*JAM*), edited by former *Amiga Computing* editor Jeff Walker, dug in on the upper floor with its own stand and soon found itself under siege by users at large.

Commodore itself was as aware of fresh blood as any of the user groups. Whereas the latter followed the usual course of friendly membership recruitment, Big C itself hit the mark with an arcade at the end of the lower exhibition hall, filled with Amigas and C64GS machines. As numbers of visitors rose steadily through the morning, this enclosure seemed at least as popular as the bar.

Apart from the top end MIDI technology being flaunted on Roland's stand, there was little in the way of new hardware. Commodore's stand was lined with new Amiga A1500s but attracting as much attention were the TV screens which were running Commodore's two new television advertisements. Commodore is now running these in major ITV regions, on Sky and BSB and in cinemas across the country. The campaign will run until December 22nd and, along with its newsprint element, will cost Commodore £5 million.

Steve Franklin, Commodore's UK boss, said that the ad agency had been briefed to produce adverts that would reinforce the company's brand name image, rather than endorse specific products.

He said the one thing he admired about Alan Sugar was that the Amstrad boss had already achieved this aim. His only other statement, that Commodore that week had sold its half-millionth Amiga in the UK, went unheard on the exhibition floors.

The users busily scouring the stands and parting with cash at a healthy rate wouldn't have cared if CBM had only sold half a dozen. ▨

• Sally Ann Matthews (pictured) who plays Jenny Bradley, the quintessential Northern lass in Coronation Street, is apparently a bit of a whizz at video games. She turned up at the opening of retail chain Leisurestore's tenth branch a couple of weeks ago, and proceeded to thrash all the gamers on top Sega games. It turns out that she's been playing Sega games for years and likes nothing better than a good shoot-'em-up. ▨

NIBBLES

- **Polaroid and Lotus have teamed up to produce slide making equipment. Lotus supplies the software, while Polaroid will be taking care of the sexy hardware.**
- **First Byte in the US has launched a new version of its *Monologue*, a memory resident PC utility which can read back word processing documents, spreadsheets or e-mail out loud.**
- **Capitalism update: Mediagenic (Activision's parent company) has announced a drop in sales of 50 per cent for the past year. The firm sold $8.7 million worth of kit. Meanwhile Commodore has announced profits of $7 million for the three months ending September 30th. That compares to a loss of $6.5 million for the same period last year. Sales stand at £200 million – mostly in Europe.**
- **The tabloids have always had a strict code on how to deal with computer game stories. They either feature brattish programmers with fast cars, or deranged youngsters perverted by interactive violence. No surprise then that the *News of the World* seized upon a story detailing gangs of kids in the US who apparently fight each other on a "my game is better than yours" basis. The story, headlined 'Nintendo empties out the schools' warned that kids in Britain could "get hooked".**
- **Commodore has become the first hardware manufacturer to join games software trade body ELSPA. The firm says it needs to work closely with software publishers, and the publishers are glad to have a manufacturer on their side.**
- **A 16MHz 286 PC has been launched by Acer. It comes with 1Mb, a 40Mb hard disk and a mono monitor. It costs £999. Call 081-569 2978.**

THE WEEK IN VIEW

Andrew Whittaker, organiser of Compute for Charity and freelance games programmer, challenges TV alarmists to look at the brighter and social side of computing.

Yet again another alarmist programme hits the airwaves. I refer not to some armchair analysts predictions of war in the Gulf, but to the recently screened *Oprah Winfrey Show* which chose to attack the Nintendo games console with tales of dangerous addiction.

Only this weekend *The News of the World* ran a story on the violent games for the console alerting parents to the dangers (while using *Mario Bros* as an illustration, which is rather like banning Postman Pat over parcel bomb fears!)

I wish for once the television programme makers would highlight the benefits of the computing hobby. One only has to visit my local computer club to see the cross section of life that is brought under one roof with a computing catalyst. From 11-year-old games players to the elderly gentleman learning programming, from the handicapped to the ablebodied. Were it not for computers these people would never have met. Conversation often strays away from computers where a wealth of people's life experiences presents itself. Who said computing kills conversation?

I have also been very lucky in being able to present computers to the handicapped. An Amiga system has transformed the life of a local severely handicapped youth. While other sections of the community look upon him with pity, the local computing community has welcome him to the fold with open arms, being more interested in his computing skills than his handicap .The lad in question has now decided to dedicate his life to working with computers, not because of some sinister addiction, but because he has found an area of life where he belongs and is welcome.

While other industries tend to distance themselves from the buying public, the personal computer industry builds no walls between supplier and purchaser. Many local computer stores throughout this country often seem like social clubs as genuine friendships build up between customers and staff.

From my own personal perspective I have been able to make friends all over the world because of the common computing bond, not only with other programmers but with other people taking their first tentative steps into the world of computing. Not many of us can say we have not made friends from computing be it to us a hobby, trade or both.

So come on television programme makers, show the positive benefits of computing for once and let people know we are all proud to be members of the world's largest social club. ■

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Which machine represents the best value for money this Yuletide?

Amiga PCs
Just how good is the latest 286 PC emulator?

Sample Sequencers
Two new music packages for the ST put to test

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Write and tell HFW what you think about anything under the Sun! Reach him at: *Express Mail, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies, even with an SAE, as we're too busy writing the magazine.

■ Crossed Lines!

While looking through my old issues of *Express*, I noticed an article about phone phreakers and how they have been ripping off British Telecom. Well, I have just received my quarterly bill, and not surprisingly, feel the need to tell you how BT have been ripping off the British Public.

The cost of one unit of phone time is now, and has been for many years, 5.06p. Therefore, phone charges have remained at the same level for many years, right? Wrong. BT have been sneakily reducing the amount of phone time you get per unit. For example, one year ago, a local call during the cheap rate period would have units of six minutes in length – now you get four minutes. This means that a 30-minute local call to a bulletin board, or indeed your grandmother, would have cost you 25p, whereas it now costs 40p. This is particularly naughty, as Parliament did rule that BT couldn't raise charges for a few years.

You may have seen BTs new advert, informing us how fair it is for them to charge 43.5p for a call to Directory Enquiries. They say they will make it up to us by reducing phone charges by 6%. They forgot to tell us that they have just increased them by 50%.

Owen Reynolds, Penarth, South Glamorgan

Well you've certainly got a BT in your bonnet, haven't you Owen? Shame you haven't quite got your facts right.

For a start, BT reduced the cost of one unit of phone time (including VAT) from 5.75p to 5.06p in 1986. And a local call, cheap rate has 5.5 minute units, not 6 minutes as you say.

True, you will be spending more on your local calls at cheap rate – a year ago, that 30-minute call to a BBS would have cost you 27.59p, but it will now cost you 37.59 pee. But the local cheap rate calls are only one part of the service that BT provides – charges for standard and peak rate calls remain unchanged.

That bit about Parliament making rulings is just not correct, either Owen. Between 1986 and September 1989 BT took a voluntary price freeze, and is now regulated by OFTEL which prohibits BT from raising its main prices by more than increases in the Retail Price Index (RPI). Currently a 'RPI minus 4.5' limit is being applied – which means that the maximum BT could put its prices up after the June 1989-June 1990 rise in inflation of 9.8% is 5.3%. And this 'RPI minus 4.5' formula will hold true until 1993.

And while being charged 43.5p to ask BT for a number so that you can dial it and pay them some more money for a call does seem well iffy at first glance, BT's line on the matter is quite solid. Apparently, half of BT's customers never use Directory Enquiries, and three-quarters 'hardly ever' use the service. Some people, however, abuse the service – telemarketing companies, for instance. Some of them make as many as 100,000 calls to Directory Enquiries in a week – just so they can telephone you, get you out of the bath and try to sell you double glazing. I don't see why my dear old Mum who has got all the phone numbers she is ever going to use written safely in her diary should have to fork out for these telemarketing chappies. Do you?

Oh, and before you ask – I haven't got any shares in British Telecom – I just like to see fairness and accuracy.

H F-W

■ Infantile Whingeing

After many months of infantile whingeing, it seemed that the 'My Computer Is Better Than Yours' debate had finally been relegated to the corner of the school playground where it belonged. (Too right –H F-W)

How thoughtful then, of C J Morris

■ Shed some light on Spectrum

Could you please shed some light on to what exactly is happening to the Spectrum +3?

A while ago I read in *Express* that production of the +3 has been discontinued. Then I read in the Spectrum column of an inferior monthly magazine that all Amstrad is doing is not promoting the machine this Christmas. If the latter is the case, then it appears to me that Amstrad have perpetrated the rumour about the +3's demise so as to dispose of the +2A's they may have.

As to the 'My Computer Is Better Than Yours Debate' (Aaargh! - H F-W) I own both a Spectrum +3 and an Amiga. As I write, the latter machine has lain unused for nearly a month. And the +3 has been used quite frequently - the reasons are twofold:

1) COST OF SOFTWARE. A full price game on the 8-bit usually cost between £10 and £15. On 16-bit, the usual cost is £25, with prices sometimes a lot higher. Although 16-bit games are usually a lot prettier, I find I sometimes gain more pleasure out of their more playable 8-bit counterparts.

2) EASE OF USE. When it comes to serious work, I find the admitted primitive +3 environment more useable that Workbench (or MS Dos for that matter). I admit, however, that this is a matter of personal preference - and I might be a bit biased, having owned a Spectrum in some form since late 1984.

When it comes down to it, the best machine is not necessarily the one with the best specifications, but the one that offers you the most in terms of useability at an affordable price.

One final point. Tell Tim 'Centrefold' Smith that he is a 'Sega'. Regular *Express* readers will remember the meaning of this Italian word from the letters page weeks ago!

Ian Inman, Stanley, Co Durham

Sadly Ian, that 'inferior monthly magazine' has got it wrong. Spectrum +3s have not been built for a few months now, and High Street retailers are no longer getting new supplies. The +3 is an ex machine...

I too have owned a Spectrum since late 1984, and despite the charms of my IIfx and Amiga, I still find myself returning to my rubber-keyed friend from time to time. There are some real classic games for beastie – and as you say, many of the new releases offer plenty of gameplay without the pretty frills of squillions of colours on the screen at one time that 16-bit machines can offer.

Finally, since his recent holiday to America Tim 'Smith' Smith is no longer a 'Sega'. He's more of a funky NeoGeo sort of a dude (or so he tells us). Judge for yourself... and have a fiver for finally giving me the chance to use this picture, which I have been hoarding for weeks.

H F-W

• NeoGeo – Smith gets funky!

(*Express* 106) to find a new approach - the 'My Computer Journalist Is Better Than Yours' debate. No doubt, this drivel will go on for months, so here's my contribution to get the ball rolling.

In the first place it is generally accepted as good humour to poke fun at the owners of rival pieces of hardware. Most owners are proud of their machines and will rubbish others in much the same way as car owners do. Of course, you always find that certain machines attract people with an inferiority complex who need reassurance that they have made the right choice.

As an ST owner, I'm not going to fall into the trap of defending the machine. It doesn't need it. Instead I'll just say that I previously owned both an ST and an Amiga and I read the computer journals of both extensively. It was my experience that there was far more deriding of the ST in Amiga magazines that vice-versa. It even spilled over into Amiga software. Try putting an ST or PC disk into Cyclone to back it up and you get messages like 'there's a nasty taste in my drive!'

So, CJ, if you really are that pale and sensitive you can't take a joke, why not sit in a corner with a security blanket and a copy of *Amiga Format* and don't risk anyone poking fun at your precious baby.

Paul Bates, Derby

But is Steve Carey better that your computer journalist, or not? That is a question that only the Steve Carey Fan Club is truly qualified to answer. **H F-W**

■ Greedy Lady?

Though I can't prove it by taking a photo, I'm sure I can win your competition for the most computers. I love them, so I have the following: ZX81, Spectrum; Spectrum +; Spectrum 128; QL; Z88; Electron; BBC A; BBC Master; Amstrad PC1640; NEC Starlet; Victor Vicki; Atari XE - a total of 13. Then I have an Atari games console, a Psion Organiser, three music keyboards, four monitors and three printers.

I intend to sell most of them when I get round to it, as they're taking over the house.

Mrs Barbara Prowse (Age 49+), London

Clearly, you are a woman after Brian Douglas' heart... But, I'm sorry Mrs P - no photo, no fiver. You can just imagine the reams of letters I'd receive listing computer after computer if I started giving away dosh without empirical proof!

My next correspondent has a slightly different tale to tell about computer ownership... **H F-W**

■ The Kiss Of Death!

Don't worry, this isn't going to be another moan at you for dropping the Oxbridge 12K-four-shades-of-grey micro column. Having said that, I was a regular buyer – like, every week since launch – mainly on the strength of your QL column. But I agree, that a couple of paragraphs telling me of things I knew about for weeks already was not inspiring. Losing the column didn't place a great dent in my weekly reading.

Despite the above comments, I must confess to being the archetypal collector of all defunct machines. I own a number of micros which were bought for their undoubted technical excellence at the time, but the very fact of me buying them seems to have been the kiss of death.

I bought an Oric-1, then the Atmos (twice) in preference to the Spectrum, which had less memory. I bought a QL because it was so advanced (and it still is), and a bought a Z88 because of its portability and software. I also bought one of the few SAM Coupés to be sold by MGT before its demise.

As you will see, none of my choices have turned out to be mass-market success stories - but I like them, and still use them all regularly. I promise not to buy an ST or an Amiga and jinx them, providing enough owners send me a pound to make sure I don't!

Alistair MacDougall, Kilsyth, Glasgow

I feel a splash of generosity coming on. Not to you, mind Alistair, but to all the ST and Amiga owners out there who don't want to see their kit go the way of the Oric. Here's a fiver, on account...

H F-W

■ Pipped With Apple

What's all this tosh about the Apple logos of Apple Corps, the record company, and Apple Computer? (*Express* 105 - H F-W) Has anybody seen the Apple Corps logo? It's a Granny Smith cut in two and viewed from the cut side, while Apple Computer's logo is a multicoloured affair with a little bite out of it, viewed from the side. If they are similar, then I'm a DRAM chip!

Just because Apple Computer have started doing MIDI kit doesn't affect Apple Corps at all – they're just being pigheaded! Go back to your studios.

Then the subject of computer shows on TV came up on the letters page. I don't know how accurate Tim Gowen was when he said that Micro Live had loads of viewers when it was scrapped, but it seems to me that the reason why there are no computer shows is that television companies just can't strike upon an acceptable format.

The sort of TV programme I would create would be aimed at the popular end of the market (much as *Express* is, no offence intended) with news, hardware and software reviews and features. It would be presented in a manner similar to *Tomorrow's World*, or *Top Gear*. Of course, if the BBC screened such a show, they would have to be careful not to take *Tomorrow's World's* material...

Simon Daniels, Long Buckby, Northants

Ugh! What a horrible idea, cutting Tim Smith's granny in half and using her as a logo.

Anyone else out there got any comments to make on why we see so little of computers on the TV screen?

H F-W

■ Sexist Crap?

It was commendable of Rod Lawton to take up the issue of women in the computer industry, but there were numerous flaws in his article which made him come across as an utter prat.

He reasons that the scarcity of female programmers in the industry is because the males dominate, and because it's the computing industry, the males are sexis and bigoted – and later he insinuates, wankers.

That's bull.

One of the reasons why there are so few women is because of the stereotype that Lawton perpetuates in his article. I doubt if many women, having read the article, would consider programming as a career – unless they were nymphomaniacs or to prove that they are better than a male.

Modern times dictate that sexism and racism will not be tolerated. And there are the appropriate authorities to back you up if ever you fall victim to either. Modern times also allow equal rights. Job stereotypes are less and less now, and with a little help, anybody can be anyone they want to be. (I'd like to be the Duke of Westminster, please - H F-W).

And that is the crux of the matter. Very few females have ever wanted to be programmers or to play games to the extent that males play games. It is not due to the industry being sexist or bigoted like Rod Lawton says, but due to the many things boys and girls like to do. They choose to do those things as a vocation later in life.

This is not sexism on the part of the industry, but a result of the general sexist stereotypes that exist. If someone dedicates time and effort to produce a product for the benefit or enjoyment of others, does it matter if it's a male or a female?

Education does teach children that they are open to do anything with their lives. But media articles that slur male programmers as obsessed computer addicts do nothing for males nor females who wish to enter or are already in the industry.

Next time Lawton wants to impress women (and the pseudo-macho photo didn't help matters), tell him to go jump off a very tall building.

Samantha Clements

Strong words indeed, Samantha. I don't think Rod has ever been called an 'utter bottom' before! (Read Darconville's Cat by Theroux if you don't believe that 'prat' means buttocks.) But you are completely right about Rod being 'pseudo-macho' – with biceps like his, he has no other choice...

It is rather strange how few women are attracted to the computer industry – especially as the person who is credited with inventing programming, Ada Lovelace, was a female.

But far be it from me to pontificate as to the whys and wherefores. Let's hear from some more female readers on the subject. **H F-W**

MAIL SHORTS

■ Arabian MSX

I recently received a letter from an MSX user in Saudi Arabia requesting information about software. Sadly, I am unable to help as our products are aimed at the Acorn Archimedes market. Perhaps you could help, Hadyn?
Vince Hudd, Soft Rock Software, Bristol

Pleased to oblige - here's that letter. **H F-W**

I am facing a problem in finding clubs and magazines for the MSX - if you could kindly recommend some addresses in this matter I'd be glad. My computer is an MSX2. Thank you.

Saleh S Al-Nasser, PO Box 1830,
Riyadh 11441, Saudi Arabia

■ More Praise

The company Hunmanby Computer Supplies is absolutely brilliant. If all mail order companies were as curteous, quick and friendly as HCS is, then there wouldn't be the kind of mistrust about mail order companies as there is from the general public.

I am in no way connected with this company – just a satisfied customer.

Dave Palmer, Jarrow, South Tyneside

Will these personal recommendations ever end? **H F-W**

■ Quick Shot

Please shoot your competitions Editor. In your 'C' competition, where copies of Lattice C and HiSoft's C interpreter were up for grabs, I was listed as one of the winners. So where is it?

Steven Stewart, Stranmillis, Belfast

On it's way to you, according to Tim 'Smith' Smith, our competitions editor. (How come this week's letters page has been taken over by Tim Smith references? Maybe his ego is really taking over the office...) **H F-W**

■ Happy Man

My ST is briliant. I'd have to be one mega DTP freak before I need more. I truly hope you Amiga owners feel the same way about your machines. Way back in the Seventies I used to operate an ICL mainframe with 128K (words) and an ITT teletype for a keyboard. That was brilliant – then!

I wouldn't mind betting that an Amiga or ST could do just about everything that ICL could do, and probably quicker, too. Please, no more MCIBTYC. You are ALL right – your computer is the best computer for you. Isn't it?

Mike Rhind, Pontardawe, Swansea

It certainly is. No man (or woman) could want more than a Mac IIfx. **H F-W**

YOU'VE GOT GAME IN YOU

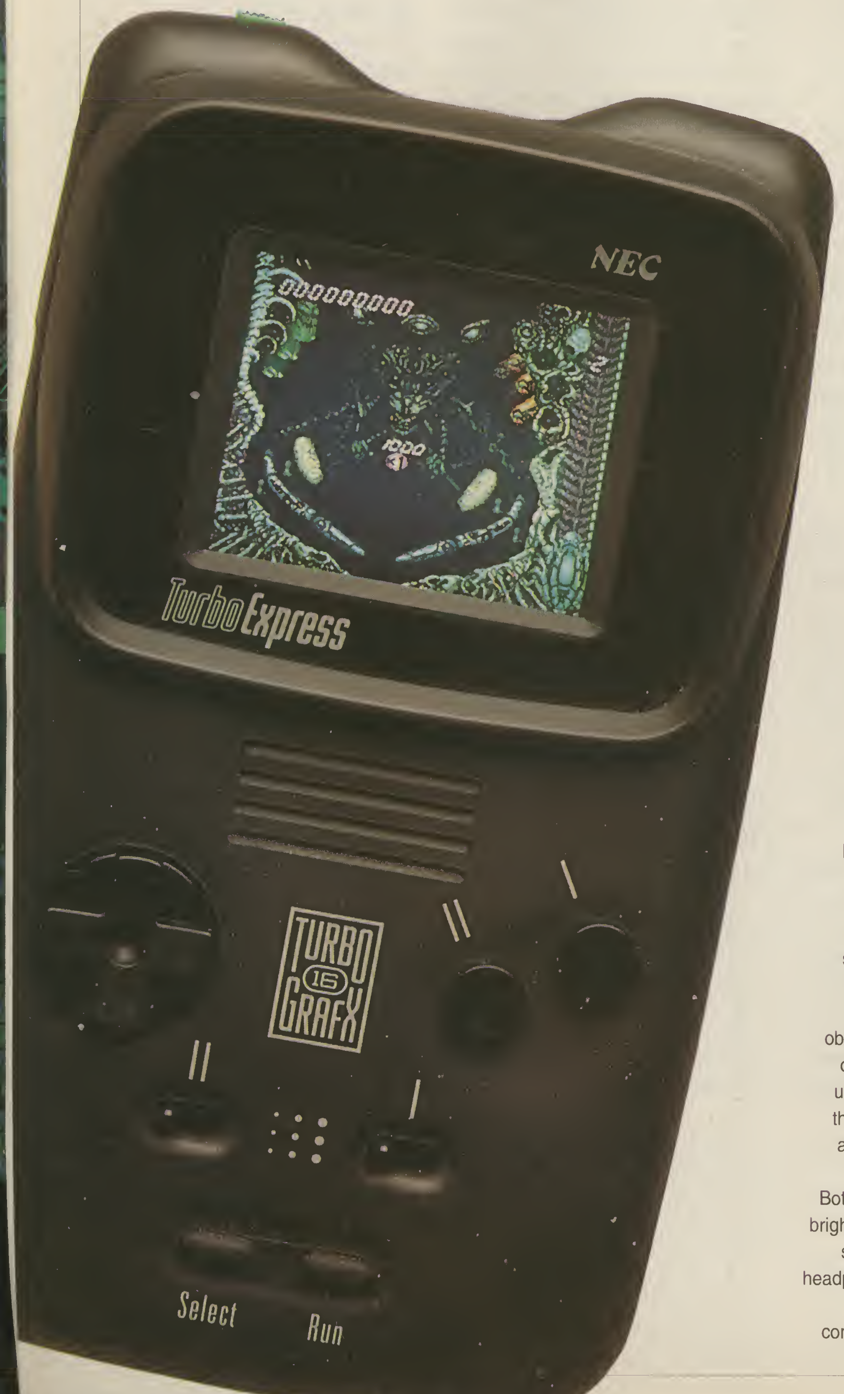
Hand-held consoles have been round for years, but they have always been limited. For a start they would only play one game – a bit tedious after a while. Another major problem was their display: the tiny black-and-white LCD left a lot to be desired for serious gameplay.

Last year Nintendo made the first move to set things right with the Gameboy. This machine featured plug-in cartridges allowing you to swap games easily. Unfortunately it still had a black and white screen (albeit a sharp and clear one) so games lacked a certain something. Nevertheless the Gameboy has been a smash hit.

Then came Atari with the Lynx. This revolutionary hand-held featured the same tiny colour LCD screen which has featured in pocket TVs like the Sony Watchman. The demand for the Lynx was so great that when it first went on sale in a couple of stores in New York and Chicago they sold out within hours.

Since then Atari has very much had the hand-held market to itself. Despite rumours, the gaming giants of Nintendo, Sega and NEC remained curiously quiet. Then rumours began to circulate of new hand-helds; machines based on the already successful technology of consoles like the Sega Master System and PC Engine. Preview models began to be shown at the major American consumer electronics fairs, stirring up a lot of interest (and front page stories in *Express*).

As we move into December, these new colour machines are beginning to appear, unofficially imported into this country. We have got hold of a Sega GameGear and NEC's hand-held PC Engine, and have given them a thorough playing with. We would have given the same treatment to the Atari Lynx, but Atari has yet to give us an evaluation machine!



SAME DIFFERENCE

Despite their obvious differences in the looks department, the two machines are extremely similar in operation. The LCD screens are the same 3-inch devices, both feature the now obligatory rocker joypad on the left to fit snugly under your thumb, and the two fire buttons are arranged diagonally to the right hand side. Both feature volume and brightness controls on the side and allow 3.5mm headphones to be plugged in to save your companions' sanity. The GameGear is slightly heavier at 600 grammes to the PC Engine's 450 grammes, but both are light enough to be comfortably carried around.

Both machines offer a cable link system to let you attach several consoles together to indulge in multi-player action. The GameGear can link two machines, while the Engine can join four players. These links are particularly good for racing-type games, where your opponent appears on the screen.

TV tuner. With the tuner in place you'll be able to pick up your favourite TV programmes between bouts of alien bashing. The PC Engine version will cost about £50 and attaches to the right hand side of the machine. It offers the usual colour and contrast controls. The Sega tuner screws on to the back of the GameGear and operates in much the same manner.

requiring six AA pencil batteries to operate. Battery life is limited to a couple of hours in both cases.

similar; both use an 8-bit chip, but they are linked up to dedicated video silicon which controls the LCD screen so their performance is better than you might expect.

PORTABLE PC ENGINE

The portable Engine is made of tough grey plastic. It has a recessed 2.6 inch screen with a speaker sitting centrally below it. The unit weighs around a pound and measures 185 x 109 x 45mm.

It has the standard joypad to the left with buttons one and two diagonally to the right. Below them are turbo option sliders and select/run buttons. The left side houses volume and brightness controls, ear jack and mains input, the right side the tuner input jacks. The power on/off is on top of the unit whilst cards slide in to a recessed back panel.

Hidden to the front is a 'comlink' jack which allows up to four players to play simultaneously.

The unit has a good solid feel and is stable even in the middle of a good thrash. The picture is good, but with detailed games like *Alien Crush* (a pinball sim) you do lose detail because of the small screen size. The sound is excellent – the speaker can blast away the six channel music and effects with great gusto.

A key advantage of the hand-held PC Engine, which goes a long way to making up for its high price, is the fact that you can use standard PC Engine games cartridges. Thus anyone who already has an Engine can save a fortune in software costs.

PC Engine games are expensive (£30 or more is not uncommon), but they are good, and the ability to play the same game on the move and on your home console is not to be sneezed at. Dozens of titles are available in PC Engine format already.

T THE WHOLE UR HANDS

Colour hand-helds are the future of portable gaming. We look at two new machines all set to give Atari's Lynx a run for its money.

However when it comes to screen specifications there is no comparison; the PC Engine wins hands down. For instance in the colours department the PC Engine has two modes; a 320 x 224 pixels resolution mode with 256 colours, and a lower resolution 312 x 238 set-up with a huge 512 colours on screen – that's comfortably more than STs, Amigas and VGA PCs can handle from a device less than five inches across! The GameGear on the other hand offers the same number of colours as its carpet-bound parent the Master System - 16 chosen from a possible 4,096. In the GameGear's favour is its screen resolution, with 480 x 146 pixels.

HEAD TO HEAD

	GameGear	PC Engine
Graphics	★★	★★★★
Sound	★★★	★★★★
Features	★★★★	★★★★
Games availability	★★	★★★
Value for money	★★★★	★★★

COST EFFECTIVE

Grey imports of both machines will soon be reaching the shops; outlets like Cybertech and Active Consoles will be offering the GameGear for around £180 and the PC Engine will follow shortly.

In Japan the PC Engine sells for just over twice the cost of the GameGear – 45,000¥ to 19,800¥. The British launch of the GameGear is due in the spring, and although Virgin Mastertronic is reticent about the pricing it is rumoured that it will come in at around £100.

It is unlikely that the hand-held PC Engine will be officially launched in this country – its been three years since the console version was first sold and NEC is still not interested in bring it to these shores. The US and Japanese versions of the machine are slightly different and will not run games from the other version, so be careful when buying grey imported machines and games that they match.

It seems likely then that there will be a premium to pay if you want to get hold of a PC Engine. Equally it seems that it will be worth paying; the PC Engine is an amazing piece of game playing technology. ■

THE SEGA GAMEGEAR

The GameGear is dark grey with a black central window containing the 3-inch LCD screen, with a speaker on the left-hand side. It is slightly heavier than the PC Engine, measuring 103 x 210 x 40 mm.

The joypad is located rather high and to the left of the screen, with the start button and two fire buttons on the right. The top panel contains the volume control, headphone jack, on/off switch, power adapter socket and a connector for linking two machines. The screen brightness control is on the right hand side.

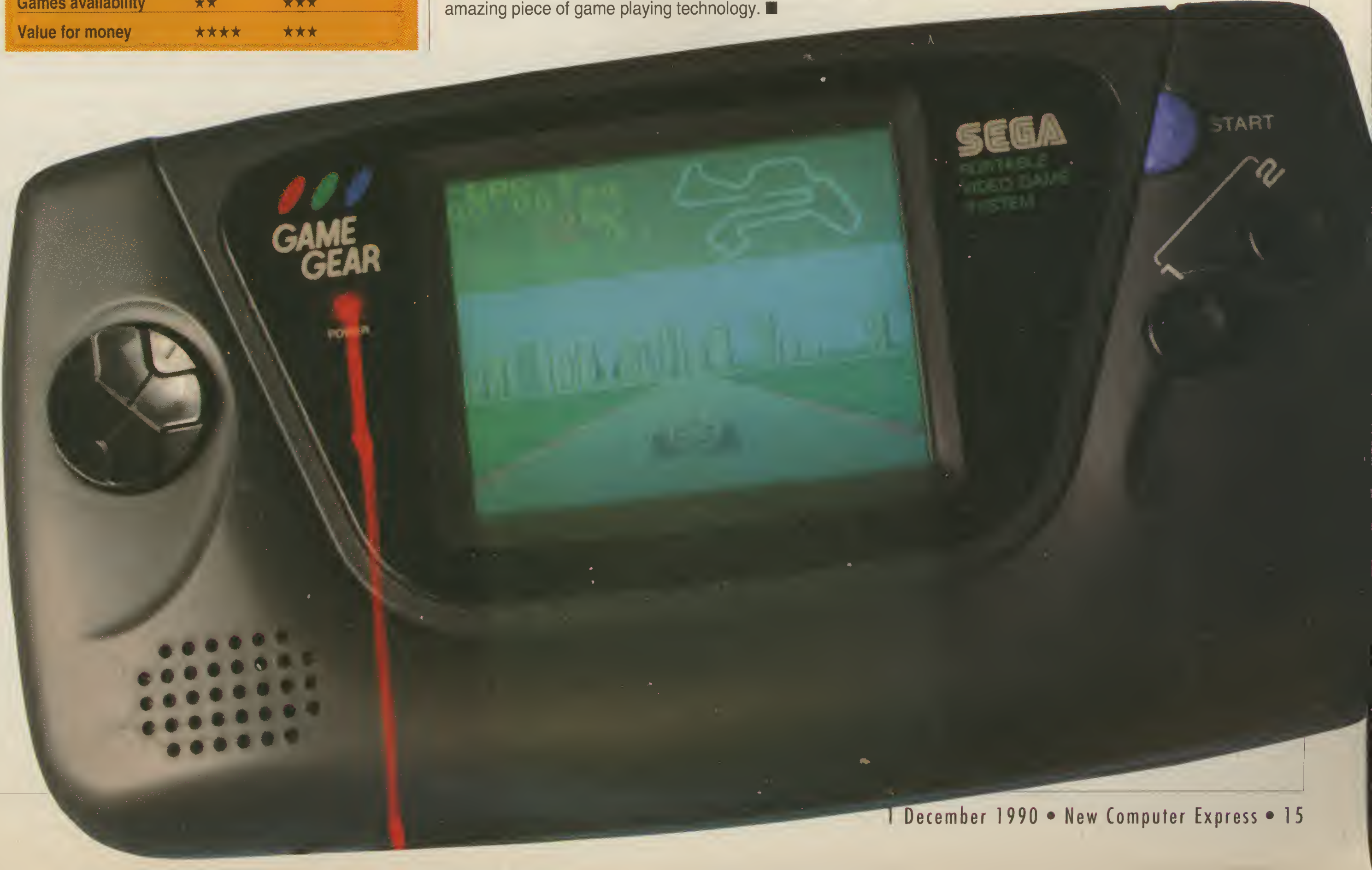
To get the best view on the screen you have to hold the machine at a pronounced angle, but the joypad and buttons have been positioned so they sit naturally when you are using them.

The screen is not sharp and rapid motion becomes blurred. On a racing game like *Super Monaco Grand Prix* this is actually an advantage as the smearing of the background as you twist and turn gives the illusion of extremely smooth scrolling. With a shoot-'em-up though it might be difficult to see the targets clearly.

The sound on the GameGear is reminiscent of a CPC or ST – not brilliant, but passable. It features three stereo channels and a noise channel.

Unfortunately the GameGear cannot use standard Master System games. At the moment only three titles are in circulation – *Super Monaco Grand Prix, Pengo* (the classic block sliding game) and *Columns*, a sort of Tetris clone. Games cost around £15 in Japan.

Although games are limited at the moment, a company with Sega's muscle will soon ensure that there is plenty to be had. Already promised are titles like *Wonderboy, Pro Baseball* and *Dragon Crystal.*



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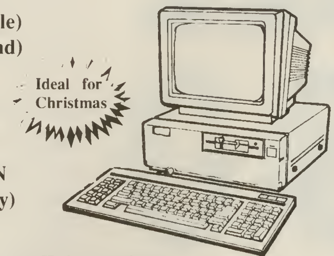

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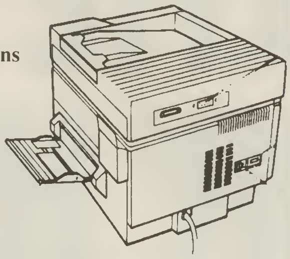

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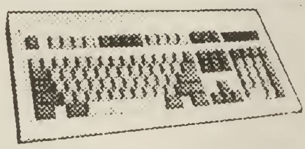

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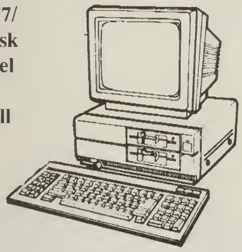

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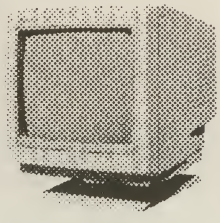

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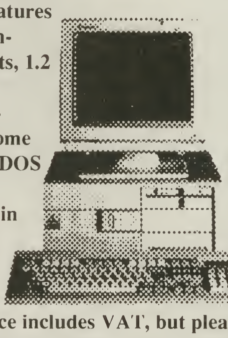

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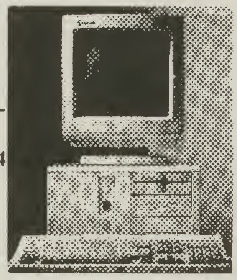

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THE GERMANS ARE COMING!

Germany was once the stronghold of Atari, but the Germans have finally started to see the error of their ways. Maxon Computer GmbH is a German company that has been producing products for the Amiga for a fair old time now, and the contents of its latest catalogue are quite stunning.

Amiga Pascal programmers have been patiently waiting years for a decent Pascal compiler, and at last Maxon have come up with the goods. Its Kick-Pascal system is a fully integrated programming environment that allows you to write, compile and run your Pascal programs from within a nice friendly editor – not unlike the approach adopted by HiSoft's successful BASIC system.

Kick-Pascal offers full support for the Pascal standard, but also offers complete support for the Amiga's own unique capabilities. Applications programmers are at last offered an alternative to the acceptable standards (C and Assembler) with a programming language that even fully addresses both 2.0 and ECS. Even if you don't possess an in-depth knowledge of the Amiga ROM Kernel, Kick-Pascal includes many in-built functions for such tasks as opening screens and windows,managing input etc. Kick-Pascal costs 189DM.

Amiga assemblers have always been the subject of dubious naming – Argonaut set the challenge with its ArgAsm system, but Maxon has beaten them with its latest release, Kick-Ass.

Just like Kick-Pascal, Kick-Ass offers a fully integrated programming environment that gives fully access to a powerful text editor, monitor, debugger, tracer and linker from within a nice friendly front-end. Never again will have have to enter meaningless command line arguments to get things moving.

Users of Kuma's hideous *K-Seka* will be pleased to know that not only is Kick-Ass *Devpac* compatible, but it will also accept *K-Seka* source files without modification. The assembler includes full optimisation options, coding sectioning (chip, data, bss) and even automatic syntax checking after each line is entered. Kick-Ass costs 89DM.

Finally, it looks like Inovatronics's acclaimed *Power Windows* has finally met it's match. *RCT* (*Requester Construction Tool*) is a powerful Intuition source code generator that will allow you to generate attractive Intuition displays without a minimal amount of hassle. The results can then be saved in a multitude of different languages including assembler, C, AmigaBASIC and even GFA-BASIC. RCTcosts 129DM.

For information concerning these products and more, get out your German phrase book and phone Maxon on 010 49 61 9648 1811.

BOOKS FOR 2.0

None of us actually have it (apart from those lucky enough to own a 3000), but already the book publishers have started pushing their new books covering the new release of the Amiga's operating system. Thanks to those ever so nice people at Adamsoft, I've just received copies of two publications – *Amiga Printers Inside & Out* and *AmigaDOS Inside & Out*.

Printers have always been a source of much frustration for first time users, so Abacus's latest is sure to receive a warm welcome. It covers the basics beginning with how printers work,setting up a printer using dip switches and plugging everything in.Then it's on to actually installing the printer on your system. The book details both the current 1.3 preference settings and even the new Workbench 2.0 Preferences (which is vastly different), how to copy across printer drivers. It also offers a number of extra tricks and tips which are supplied on a free diskette which is bundled with every copy (no, you don't have to pay extra!). For printer owners, this is a must.

Next up is *AmigaDOS Inside & Out* which has been revised once again to cover the new commands within Workbench 2.0. In truth, there aren't actually that many new commands, but 2.0 does provide many enhancements over the current command set. The book documents all these changes, plus an in-depth guide to Ed and Edit. There's also a guide to writing your own AmigaDOS Shell commands using C, customising your StartUp-Sequence and a nice techie section on tasks and taskhandling, devices etc. All good clean fun for boffins everywhere.

For more details about these books and more, give AdamSoft a call on 0706 524304. It'll be pleased to fill you in.

HARD DRIVIN' ON THE A1000

I've had quite a few people contact me regarding a tip published within *Express'* sister publication *Amiga Format*.

The tip claims that the A590 hard drive (which was designed for use on the A500) can be plugged in and used on an A1000 without need of any form of interfacing. Most seemed naturally rather sceptical, but the truth is that this is entirely correct – the A1000 can indeed use the A590, and many other peripherals that run through the expansion bus.

It's a little known fact that the A1000 and A500 expansion buses are virtually identical. The only difference between them is that the A500 has an extra 7MHz clock signal that isn't present on the A1000. In reality though, very few A500 peripherals actually seem to use this extra line, so compatibility is high.

In truth, the only major difference is the orientation of the connector itself. Whilst the A500's bus resides on the left hand side of the machine, the A1000 has its expansion bus hidden away on the right hand side.

This basically means that any peripherals designed for the A500 must be plugged in reversed – in the case of A590, the front panel faces backwards, the rear SCSI connector faces forward etc.

You will also need to support any A500 devices by placing something like a book underneath it (the A1000 connector is higher than its A500 counterpart).

A word of warning, though. Be careful when plugging devices such as the A590 into your A1000 – the connector must be pushed in as far as it will go or the drive will fail to be recognised. I had quite a lot of fun trying to get an A590 to work on my A1000, just because I hadn't lined up the connectors correctly.

If you've got an A1000 and you're after a hard drive, then my advice is to buy yourself an A590. Just like the A500, you can also add RAM to your system by inserting RAM chips inside the A590. At current discounting, the drive can be picked up for as little as £250- which is hundreds of pounds cheaper than even the cheapest dedicated A1000 drive!

Hard drives aren't the only devices that can be used with the A1000. I've been using an A500 'Mini-Megs' 2Mb RAM expansion on my A1000 for the past couple of months now (kindly donated to me by George Thomson Services), and it has performed faultlessly.

Indeed, I can quickly disconnect the card from my A1000 and then plug it straight into an A500 in a matter of seconds – now that's what I call connectability!

Jason Holborn

Archimedes

IZZY WIZZY LET'S GET SCSI

Technomatic is about to take delivery of the first batch of its new SCSI boards. These little beasts behave in much the same way as all the other SCSI boards currently available, but do so with the latest three-chip technology and, according to Technomatic, faster than any of the competition. For the £179 price tag, you also get full Acorn compatibility and, of course most importantly, an extra icon on your icon bar.

I must apologise for referring to a 'SCSI interface' last week, I do know what the 'I' stands for really! While talking about Technomatic, I might as well mention the new version of the *TechnoSCAN* software. For a shade over 20 notes, you get a pretty little ROM (complete with snazzy silver writing) and a disk with a new !Scanner application on it. Users of the old version will have no trouble at all getting to grips with the new one. New features include a set-up menu allowing the size of the scan (width and height) to be altered as well as the image resolution – true 400 dpi monochrome scanning is now supported as well as 8- and 16- level grey scale.

A time out can be set to switch the scanner's LEDs off if the scanner is inactive. This protects the LEDs and prolongs their life. An option is provided for rotating scans, but you still cannot scan horizontally. The save sprite menu has been improved, allowing the sprite name to be altered as well as the filename. There is still no support for scanning multiple images and saving them in one file, they must be transferred into !Paint to do this. A Print menu has been added to dump scans to a printer without the need of transferring to !Paint. All version 1's features are still available – scan zooming, clipping and rescaling but all have had that extra tweak to make this a worthy sequel.

FLYING IN A BLUE DREAM

The 4th Dimension's rival to *Interdictor* has finally arrived and is well worth the wait. *Interdictor II* may well be a 'full force model' and 'a near perfect simulation' but until it looks as if you are actually flying, i.e. until the landscape looks realistic with real contours, you can see out of your plane in any direction and watch your flaps moving and they make lorries that don't drive across the lake, I'm afraid that all this realism is rather lost.

Full marks to the Simis team for their dedication to producing an accurate game, not many for producing a fun and interesting game. Enter, please, *Chock's Away*. Here, the reverse is true, you control your tiger moth biplane with up, down, left, right, faster and slower. Rudder? What rudder?

But that isn't really important, *Chock's Away* is actually fun. You can play with two players (the screen is split into two views), you can view the game from outside your plane, there are three maps, a flight recorder, a practice mode, a dogfight mode and, most importantly, 20 missions that can be played solo or with 2 players.

In true *Aviator* style you have an inverted 'T' gunsight, you can fly between the rugby posts and the plane even settles backwards onto its rear wheel after landing. The explosions are pretty and the smoke clouds convincing.

What's wrong with it? Well, a few things, the shadow is always plotted at sea level unless you are actually on the ground, so it suddenly jumps when you touch down on the aircraft carrier. The perspective goes rather 'violent' sometimes when you are close to objects, the front end is rather inferior, having the seemingly obligatory 4th Dimension character definitions, varying mouse speeds, peculiar non-standardised menus and the occasional annoying screen flash.

The only major criticism is that it is rather on the slow side sometimes. Oh well, perhaps an ARM 3 or A540 isn't that expensive after all.

In the end though all these are unimportant, *Chock's Away* is a fun game. £25 well spent.My final comment for Clares would be: keep trying. I can see there is something in *Interdictor II*, perhaps if Simis

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converted one of their real flight simulators (as shown on *Tomorrow's World* a month ago) we'd be able to show the rest of the world what the Archie is made of.

GAMES SNIPPETS

Wonderland is now scheduled for a January release at the latest! Apparently Virgin has sorted out all the packaging and such like and will be shipping the game as soon as possible. I may even be able to give you a review in the next couple of weeks.

As a follow up to *MicroDrive*, CIS will be releasing a course designer. It will come complete with four new courses plus the original two. Due to the high complexity of designing contours in the development version, it is likely that the final release version will have a large number of preset hills that can be placed on each hole.

Calderglen, more well known as a supplier of hardware, has a second game out now. *Kaptain Konflict* looks rather like *Commando* but much prettier, watch out for it. Superior Software, which is still really in the BBC market, has set an early December release for *Master Break*. This is a trivia game based around snooker – rather similar to the 'arcade' game *Give us a Break*. It will feature 2,000 questions in six categories, some complete with music and graphics. Further question disks are planned for release next year.

If Superior can negotiate the rights with Infogrames and Maxis, an Archie version of *Sim City* is a definite possibility, but not this year.

Finally, ARXE systems has a large number of Sisteme's *Ballarena* (which I have yet to see!) now in stock. So why not phone 081-534 1198 (evenings) to get your copy and save an expensive call to France!

RISCOS COMPLAINTS

Following on from last week's RISC-OS style piece, one of my own personal dislikes in applications is when a setting in a dialogue box can only be changed by cycling through the available options with select and adjust. This may be OK if only two or three options are available, but many more and this becomes a pain – a menu should be provided.

Clares' *Rhapsody's* note/rest etc menus unfortunately suffer from this – you must step forward and backwards through the various quavers and minims to find the particular duration you require. *!PrinterDM* has the same problem when selecting the printer type and resolution.

Oh yes, and how about the annoying habit of applications using the hourglass to show how they are progressing, only to find it reach 99 per cent then start again and again and again.

CONTACTS

If you want to follow up any of these products, you'll need these: Technomatic 081-205 9558, 4th Dimension 0742 700661, Clares 0606 48511, Virgin 071-727 8070, Calderglen 0282 871717, Superior 0652 58585.

Ken Coumarin

PC

DRIVING MAD

I have to admit that driving games are my weakness, racing games even more so. Which is why two new games, from Accolade and Gremlin respectively, were ripped out of their Jiffy bags before anyone else in the office could get their thieving hands on the post.

Accolade's *Grand Prix Circuit* has all the makings of a Lawton favourite. First of all, it's about Formula One, the greatest sport in the world. Secondly, you get to drive on all the world's famous circuits in your bid to become champion. Thirdly, you can even choose which team you drive for.

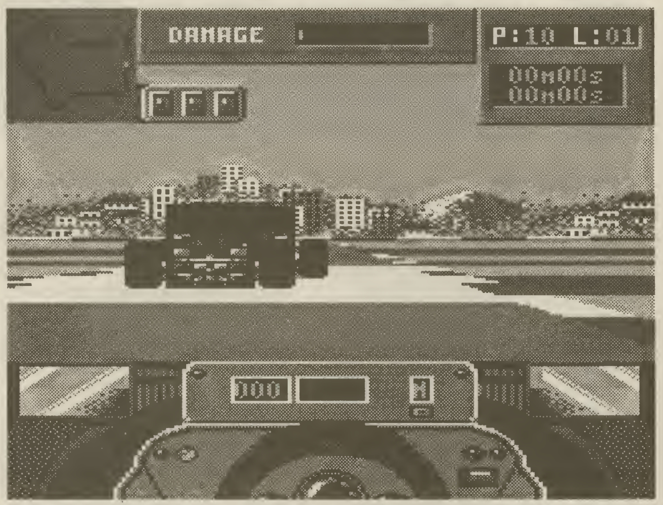
This last choice is a bit of a poser. Now, you could go for the Ferrari. It handles like a dream, but it's a bit short of speed down the straights. Or there's the McLaren, which goes like anything but corners like a battleship. And then there's the Williams – maybe this one's got the compromise of speed and handling that you need?

Great – a game that features all the famous names and cars of Formula One racing. Now all we need's a digitised Murray Walker and James Hunt…!

The trouble is, it all falls down once you get on the track. Well, not falls down precisely, but begins to pale.

FERRARI
PSB
9
Accolade

• *Hmm… do we want to drive for Ferrari this year? It's a tricky one, isn't it…?*



• Grand Prix Circuit looks pretty, but the on-track action is just too slow.

The graphics are colourful enough, but just too slow. I'm afraid it's *Test Drive 2/The Cycles* all over again, a combination of sluggish screen update and oversensitive control. Although that's perhaps a bit misleading. The trouble is that you have to work so hard to correct one slide you create another one twice the size. More like trying to get a ten-year-old Skoda round a greasy roundabout that guiding a thoroughbred, race-tuned rocketship around the Nurburgring...

That said, *Grand Prix Circuit* does run a tad faster and smoother than its predecessors. It's still not enough, though, to turn it into a decent racing game. When you're qualifying it would seem to be impossible to come in better than last, while during the race, as long as you can storm to the front in the first few seconds. (Just take to the grass to get past the pack).

There are other gameplay problems too. It's a shame, as the principle of the game and the factual content are great. And I was looking forward to a brilliant season's racing, too.

By contrast, Gremlin's *Lotus Esprit Turbo Challenge* looks anything but slow. This one only came in this morning (literally), so I've only been able to play it for a short time. Being programmed in four-colour mode it doesn't look quite as pretty as *Grand Prix Circuit*, and the split-screen display (there's a simultaneous two-player option) leaves you with a wide but very narrow (from bottom to top) playing window, but in one-player mode the things moves like greased lighting. Two players slow it down quite a lot, but it's still extremely playable. Best of all is when you come up behind your opponent's car and give him or her a nasty surprise by belting past – the first they know about it is seeing your car suddenly appear in front of them.

Like I say, I haven't had the chance to play *Lotus Esprit Turbo Challenge* much yet, but I get the feeling I'm going to. Look out for the full review real soon!

COUNTING THE COST

It's been a few months since ABC software from sunny Weston-super-Mare produced the easy-to-use *Small Business Accounts* package, but boss Andy Constant hasn't been idle. His latest project, *Costmaster*, is aimed at self-employed types needing a fast and efficient way of costing their jobs and turning out estimates.

The program lets you store customer details on a database, ascribe regularly-used items to single keypresses (for example, the price of housebricks) and calculate costings. In common with *Small Business Accounts*, you also get your last ten 'moves' recorded so that you always know what you've done.

The program does a lot more that there isn't really space here to describe – suffice to say that it's hard to imagine any costing job it couldn't handle. The only thing is, the manual is there to guide you through the program, not tell you how to run up costings. For that, you need other advice.

Cost of the program is £27.95, and you can find out more by writing to ABC at 31 Magdalen Way, Worle, Weston-super-Mare, Avon BS22 0PG, or calling 0934 516714.

AUTHORS NOTE

I've got a letter here from Simon Warford of London. Here's what he has to say.

"First of all, I have a favour to ask you. I am attempting to set up a fanzine dedicated to new writers of science fiction/fantasy. It will be set up along the lines of a writers' workshop. Each issue will contain, depending on the length, one or two short stories or a novella. The following issue will then contain letters of praise and constructive criticism on those stories as well as new ones. There is more, but this is the basic premise.

"The favour is this: that you print this letter and my address in full so that people interested can write to me (enclosing an SAE) for an information pack.

But what's this got to do with the CPC, Simon?

"Well, it's simple: the whole thing will be put together using *Pyraword* and *Stop Press* on a 6128. Neat tie-in, eh? If you could do this, I would be eternally grateful."

OK, anyone interested can write to: Simon Warford, 134 Draper House, Hampton St, London SE1 6SY. It's a good practical use for a CPC and also a good idea for writers. I must admit, I've dabbled a bit in sci-fi myself, and have thought once or twice about a mag on Simon's lines. Unlike me, though, Simon's gone out and done it – good for him!

It's a pretty good basic idea, and all you budding Asimovs out there should get cracking.

Rod Lawton

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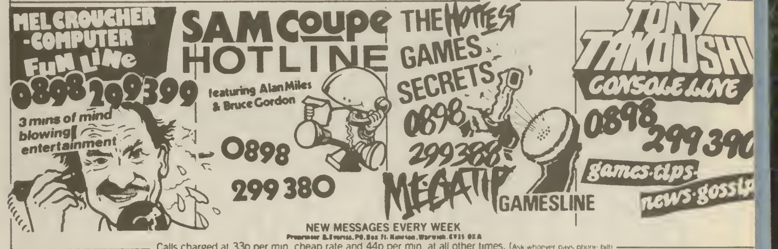

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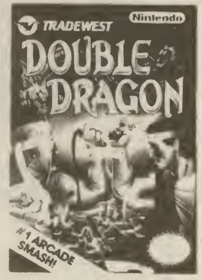

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64

HIT THE BAR

Following its recent announcement that profits were down on the year by £50 million (see *Express* 106), Commodore began its sixteenth end of year show by hauling the UK bosses up before some frosty industry and press people, at 9.00 am sharp, and getting them to explain why they were going to spend five million pounds on a Christmas advertising campaign between Monday November 19th and Christmas.

They're doing it so that people will get into the habit of saying, "Have you seen that new Commodore ad?" in the same way that they talk about Levis 30-second spectaculars. The two filmed advertisements concentrate on two individuals who risk their lives without using computers. One of them is an aboriginal youth who launches a boomerang and then blindfolds himself before catching it; the other is a native of the New Hebrides who undergoes a ritual called land diving in which he throws himself from an enormous height, having previously tied long enough vines to his ankles to stop his fall just before the ground does. At the end of each advert, there's footage of both a GS and a 64. Commodore believes that sane adults who see these advertisements will then be more likely to buy one of their machines than any new fridge they might need. This may prove to be correct.

BACK TO BUSINESS

The rest of the Commodore Christmas Show was about as lively and enjoyable as you'd expect one to be after 15 years' practice. Peripheral manufacturers, user groups and fanzines and software and hardware dealers filled two exhibition halls in the perennial Hammersmith Novotel venue. However, perhaps slightly more noticeable at this show was the bite of hard economics. A few dealers never made it to the stands they'd booked and that can only mean they're in extreme financial difficulty. Without getting sidetracked too much here, I'd bet that we'll see a handful of the mail order outfits and small electronics companies that support the C64 go out of business in 1991. Such speculation didn't spoil the weekend, however, of the few visitors who spoke to me.

GOT 'EM!

Four games certain to be missed in Mark Higham's column are *Helter Skelter*, *Gotcha!*, *Summer Camp* and

• Because it's getting close to Christmas, I think it's worth running a little competition to help Commodore's advertising campaign along. This still is taken from a press pack about the new ad campaign and it's given the witty caption: "In a new departure from computer advertising Commodore uses the ancient ritual of land diving to portray the excitement and originality of its new range of leisure computers." Okay, you can wake up now. This photo deserves a better caption than that. Send something funnier to: "Five Million Quid Is No Laughing Matter", C64 Column, NCE, Future Publishing, 30 Monmouth St, Bath, BA1 2BW. Your side-splittingly funny words should get here by Tuesday December 18th. If the winning entry really tickles my peripherals the sender will win a year's subscription to an excellent little magazine I've come across called Commodore Format.

The Spy Who Loved Me – the C64 versions of which have all arrived in the office recently. *Helter Skelter* is an Audiogenic platform game in which you must bounce a ball between walls and platforms to knock out cuddly looking creatures. You have have to bash the creatures in a given order (indicated by an arrow which appears precariously above the head of the next creature in line). Hit the wrong creature and it splits into two. Matters are made more difficult by a time limit in which a screen must be cleared. It's tough from the start but certain items help. One freezes time, another stops the creatures in their tracks and a third makes everything on the screen a viable target. If you're into therapeutic furry thang squashin', this one's for you.

Kingsoft's *Gotcha!* has the distinction of being quite unlike anything that's gone before. We're talking more bouncy balls but that's where similarity ends. You have to colour code your ball from a row of paint pots at the bottom of the screen and with it duly hued, knock out an appropriately coloured blob from the top of the screen. In your way are a number of obstacles which do unspeakably bad things to your ball. It's a lot harder than it sounds but unfortunately it's not very exciting either.

Dumb scenarios are practically prerequisites for good platform games so it seems only fair that one such outrageous idea is employed by Thalamus in *Summer Camp*. Maximus the mouse follows in the footsteps of such pioneers as Miner Willy and Bounty Bob through screens full of elevator balloons and bed spring trampolines in a fairly cheerful and colourful Christmas release.

Domark's *Spy Who Loved Me* is its 007th pot-boiler but by no means the best of the Bond licences. If you don't suffer from deja vu in the *Spy Hunter*-like sequences you might still find it's worth a crack.

Try before you buy.

Sean Masterson

PC

SMOOTHING IT OUT

There has been a utility on the Apple Macintosh for some time now called Adobe Type Manager. This remarkable widget generates screen and printer fonts on the fly from PostScript fonts, and is now available in a version for Microsoft Windows 3.

Being able to create instant screen fonts means that text on the screen is always smooth-edged and clear, no matter what point size it is in. There is no need to have dozens of screen fonts knocking about, *ATM* generates its own as and when you need them.

Even better, *ATM* allows you to generate printer fonts on the fly too. Anyone who has a LaserJet will know the vast amount of hard disk space that even a few take up, and when you get into desktop publishing, large fonts can take up many megabytes. With *ATM* you can use PostScript outline fonts instead, which take up only 40K or so per family - that's every point size your software allows you to use.

ATM is simple to install and completely transparent in use; a small loading icon appears when you launch Windows and that's about all you ever need to know. An application program allows you to install new fonts and to select the size of the RAM cache which it uses to store the fonts it generates in a session.

Considering that it has to calculate the fonts afresh each time you need to use one *ATM* is surprisingly fast, even on an unexceptional PC. I haven't yet fully explored its printing options, and I'll report back when I have.

ATM costs a mere £79 including three free PostScript fonts from Adobe on 071-627 1000.

FRESH BATCH

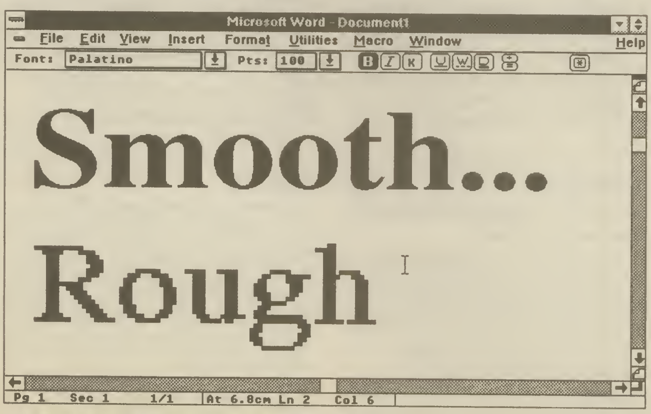
Batch files are deadly slow, but then, they're free. One of the reasons they're slow is that MS-DOS insists on going off to disk for each new line. You can prove this easily enough by running the sample file below and releasing the disk part way through.

```
ECHO PRINTING IRRELEVANT WAFFLE
ECHO PRINTING IRRELEVANT WAFFLE

--add a hundred or so lines here

ECHO PRINTING IRRELEVANT WAFFLE
ECHO PRINTING IRRELEVANT WAFFLE
```

Normally I wouldn't recommend this


Microsoft Word - Document1
File Edit View Insert Format Utilities Macro Window Help
Font: Palatino
Pts: 100
Pg 1 Sec 1 1/1 At 6.8cm Ln 2 Col 6

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Rough

• *Quite a difernce! ATM smooths out those rough bits.*

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practice but it does illustrate the process rather well. Every time the disk comes out the printing stops, MS-DOS tells you how upset it is at not being able to read the disk and you're asked if you would like to Abort, Retry or Fail (or something similar depending on the version of MS-DOS you're using.

This is obvious enough but it has some consequences when building batch files to run things from floppy disks. If your batch file includes instructions to change disks then it absolutely has to be running from somewhere other than the disk being changed. That's the reason that hard disk owners often find batch files hanging around on their hard disks after installing software. The first thing the installation routine has done is to copy a batch file to the hard disk and transfer control. Now you know.

One of the major reasons that batch file compilers speed things up is that they run everything in memory - not from disk. This has the added bonus that with a compiled batch file you can run it and immediately change disks - everything keeps right on rolling. If you want to build batch files that necessitate disk swapping buy a batch file compiler - you often get extra commands thrown in too - many of them quite useful. One final tip. Don't use ANSI.SYS commands in batch files you plan to hand out - not everyone bothers to install it and the without it ANSI commands make a complete hash of the screen.

Stuart Anderton and Steve Patient

Spectrum

GLAM TIMES

It's good to see the Spectrum isn't getting passed over in favour of 16-bit machines when it comes to the glamourous, exciting and usually rather memory intensive world of flight simulation. Due out for our machine in the near future is the long drooled after *F-16 Combat Pilot* from Speccy users fave producers of software of a distinctly flight simmy nature, Digital Integration. I've raved about this a few times over the years and it appears it's finally ready. At least with Digital Integration you can bet the delay's been caused by their fanatical attention to detail or tireless game testing rather than trying to find a celeb to endorse it or something.

It promises to be a flight simulator of the old, more authentic school where purchasing the farm, as we pilots say, is a regular occurence and the list of controls runs to a chunky handbook full, rather than the new upstart breed of more action based affairs. There should be enough action in F-16 for even the most experienced of Speccy fliers though with ground targets, varied armoury, day and night flying, a strategy mode and a profusion of devilish MiG 29s trying to 'prang your kite'. I'm dusting off my goggles and silly leather hat even as we speak.

Digital Integration isn't leaving Speccy types out of the fun with its next game either, I'm glad to report. The sequel to the excellent *Advanced Tactical Fighter* is planned for Speccy release in January and I think we should all salute these wizard chaps for their continued support above and beyond the call of duty. Watch out for the definitive reviews in a future *Your Sinclair*.

TECH TALK

I've heard lots of good things about the rather technically titled SC_ASSEMBLER for the SAM Coupé which comes from the rather homely titled Steve's Software of 7 Narrow Close, Histon, Cambridge CB4 4XX. Unfortunately I'm too thick when it comes to complicated things like assemblers to confirm this but I can tell you that the latest incarnation, version 1.2 has just been released.

Improvements are numerous and include a faster Keyscan editor so you can type at finger endangering speeds, an auto insert command which lets you insert extra lines, the ability to assemble to different parts of the SAM memory, and best of all a bonus freebie program called SC_SPECLONE. This turns out to be another Spectrum emulator which goes a long way further than the official bundled utility and apparently achieves an estimated 99 per cent compatibility with 48K Speccy programs.

It's menu driven making it pretty easy to operate and options to use a printer are included. As well as that excellent and thoroughly worthwhile bonus, the 512K version of the SC_ASSEMBLER comes with a trendy desk top published manual that's a lot fatter than the one you get with the plain vanilla 256K one.

The author, Carol Brookshank (who writes for the respected *FORMAT* mag) makes the harsh forbidding world of assemblers a little bit clearer and it's a pity weedy underpriviledged 256K owners don't get a similar publication to guide them through the copious features of the assembler. The other benefit 512K owners get in this case is obviously more space for source code and the like. SC_ASSEMBLER Version 1.2 costs £10 for the 256K SAM and £12.50 for 512K Coupé owners.

Steve's Software generously offers free upgrades from previous versions to anyone sending the original assembler disk, customer number and SAE. You can also upgrade to the bigger 512K version for a measly £2.50. Both version come with the aforementioned bargain copy of SC_SPECLONE. A bargain eh?

COPY IT

The clever bloke who wrote all this, Steve Nutting, also let me have the following excellent SAM tip. "You might be interested to know there is a way to speed up copying disks on SAM DOS 2. First you will need to find out on the disk you need to copy the last track the programs use, then

```
POKE 493764,62,track+1,201:
FORMAT "d1:" TO "d2:"
```

The disk will now Format tracks 0 to

the last track you poked in and copy the tracks. For example, to copy SC_Assembler 256K it took 33 seconds and 48 seconds for 512K. Also if you POKE from 498530 to 498538 with 0 you cancel out the "Are you sure Y/N?" Huge unqualified amounts of grateful thanks to Steve for supplying me with that.

SOCCER TIPS

Here are a few tips for the SAM Coupé version of *Football Director II*, which were kindly sent to me by the thoroughly sound John Newman of Kent. John didn't say but I think you'll need to break into the program to enter the first two cheats. For lots of money – LET AI = AI + n (where n = amount of money). Then press F5. For morale – LET HE = 99 Then press F5. If you're losing a game, break into the program and type R1 = your score: LET R1=R.

Another tip is to buy from Division One and always use your scout to go for one type of player only and with a skill of eight or nine.

Thanks John! If anyone else has got any tips, cheats or pokes for games, be they Speccy or SAM titles, send them without further delay to me, Robin Alway at The Spectrum Column, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

Infinite thanks, the warm feeling that comes from giving unselfishly and possible a free game or something could be your reward.

Robin Alway

ST

PC SPEED PRICE PLUMMETS

If you have to use a PC contemptible at work and would like to work at home too, you're probably wondering whether you can use your ST.

The answer is, it rather depends. More recent STs can read from and write to PC formatted disks, so if your work is mostly word processing you can use your ST word processor and create an ASCII file (ie one that doesn't have lots of additional control codes in), then load it into your PC word processor at work.

If, however, your work involves any kind of graphics or other stuff that can't be done in ASCII files – database or spreadsheet work, for instance – you're going to have to get yourself PC'd up.

What, you say, buy a second computer when I already have an ST? Er, no actually. Buy a PC emulator, a little piece of kit that contains the guts and gubbins of a PC but enables your ST to act as keyboard and controller.

Believe it or not, such a device costs less than £200. In fact, with the recently announced price cut of one of the most popular PC emulators, it now costs less than £100. Now that really is quite something.

PC Speed is distributed in this country by the recently established UK branch of Compo, the German manufacturers. Boss Neal Onions explained to me that this remarkable price chop is down to German technical wizardry, though this is of course complete poppycock (how can German technical wizardry suddenly make it profitable to sell the same piece of hardware at half the price it was previously costing?).

Anyway, ours is not to reason why, ours is but to call Compo on 0480 891819 for more details of the amazing £99 PC Speed.

SHOW BUSINESS TIME

Actually, a better way to get your hands on PC Speed is to turn up at Wembley Arena between December 6th and 9th, where you'll find the *Computer Shopper* Show in full swing. Compo will be there, as will hundreds of box-shifters offering bargains of all kinds.

Entry is a fiver, but this isn't expensive. In fact, it's bloody outrageously expensive, and I demand the resignation of the organisers immediately.

SHOW BUSINESS II: THE REVENGE

If you're too busy trying to cope with C******s and all that shenanigans to make it to *Computer Shopper*, there's always the 16-bit Computer Fair from 4th to 6th January.

All the big guns of the ST universe will be there, including Silica, Microdeal, Gasteiner, Power Computing, 2-bit Systems and Hybrid Arts.

And also present are expected to be German companies GE-Soft, Protar Electronics and Manfred Carle, as well as Americans Double Click Software, responsible for superb programs DC Desktop and DC Utilities.

More details of this show a little nearer the time.

MASTER SOUND REVAMP

Speaking of Microdeal – and I was, if you look carefully – Master Sound, one of the best of the new generation of ST budget samplers, has undergone an update, if that doesn't seem like a contradiction in terms.

The latest version includes all kinds of exotic-sounding features, such as an oscilloscope, 3D display, filter, shrink and cuddly toy, I shouldn't wonder.

So now you can incorporate samples of your own choosing into your musical twiddlings. Just think: it doesn't have to be James Brown or John Bonham all the time, it could be... well, Kylie or Bros (quick joke: Knock, knock! Who's there? Bros. Bros who? That's show business!).

Price of Master Sound 2 is a very modest £39.95 from Microdeal, which eagerly awaits your call on 0726 69692. Don't disappoint.

VIRUS ATTACK

Anyone who bought the December issue of an ST magazine called *ST User* got rather more than they bargained for, it appears. For on the cover disk was not only the usual collection of programs, but a rather nasty little virus called Green Goblin -so called because

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** Requires the Amiga to be opened. Needs Kickstart v1.3 or above.*

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that's the message it flashes onto your screen.

If you have ever found your ST doing strange things – your mouse behaves as if it's upside down, for example; or a part of the screen is suddenly inverted; or your ST gets up, blows a raspberry and walks out on you right in the middle of a game – it's more than likely that you've been hit by a virus.

For those who don't know, a virus is a destructive program that can seriously damage your disks, written by a total and utter *@!&! who hasn't got the brains to know he's got none and is incapable of writing any more complex piece of code or washing or getting a girlfriend. Usually a virus silently and secretly copies itself onto other disks, thereby spreading the disease.

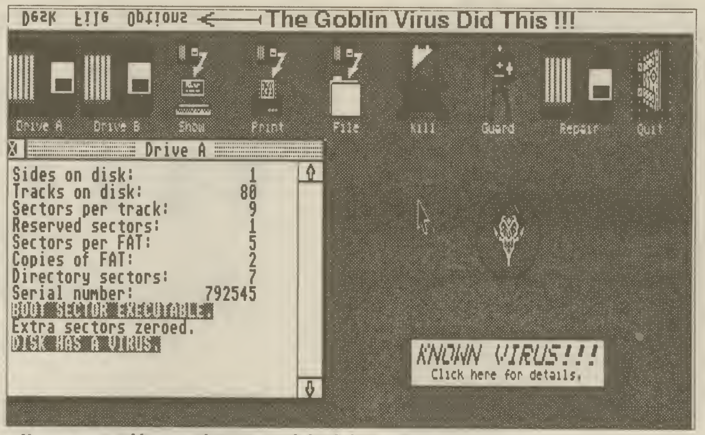
One of the most dangerous kind is a boot sector virus, named because that's the part of the disk it writes itself to. And that's the danger of such viruses – of which Green Goblin is one – because if one gets onto a commercial game, it ruins it. You can't load it.

I understand that the ST User virus got onto the disk at the duplicator, Stanley Precision, after it was instructed to make a change to the mastered disk. This strikes me as bad practice.

What's also rather odd is that this is not some new, exotic and unheard of virus, but one discovered 18 months ago.

So I thought I'd just remind you of the steps you should take to protect yourself from these nasty little buggers.

Firstly, get yourself a decent virus detector and killer – CRL's aptly named *Virus Killer* is probably the best and certainly the best known (£9.95 from 081 533 2918), though most public domain libraries have a few good ones in stock.



```
Sides on disk:              1
Tracks on disk:            80
Sectors per track:          9
Reserved sectors:           1
Sectors per FAT:            5
Copies of FAT:              2
Directory sectors:          7
Serial number:         792545
BOOT SECTOR EXECUTABLE.
Extra sectors zeroed.
DISK HAS A VIRUS.
```

• *Nasty green goblins wandering around the disk.*

Secondly, use it. (WARNING: do not use it on games. It'll detecting the auto-loader in the boot sector and destroy it, causing as much damage as the worst virus.)

Thirdly – and if you don't already have a virus killer, this could well be the most crucial step for you to take right now – make sure the write protect tab on all of your disks is in the on position except when you need to write to disk.

Most games, for instance, don't need you to write to disk, and should therefore never be exposed to the risk of infection. In plain terms: if you can see through the little hole in the corner of your disk, you're OK.

Fourthly, when you're inserting a disk into your drive, first of all turn off your ST for 30 seconds. (That way, any viruses in your ST's memory will be killed.) It's a pain in the bum, but it's a hell of a lot better than finding your entire disk collection infected.

Sixthly, make a back up of any important disks and put the originals away safely. Never use an original if you can use a back up.

This has been a public service announcement.

A MOUSE WITHOUT BALLS

A fortnight ago in this column I raved about Golden Image's new £150 scanner, which also features the highly rated *Touch Up* software.

Now the same company has come up with a rather intriguing item: a mouse that works by light. Usually, as you'll know, a computer mouse has rollers that detect movement via a little ball.

Problem is, the little bugger invariably gets clogged up with the dust and general grunge that accumulates on your desktop. Golden Image's solution: a mouse that detects movement by light.

I've been using one for a while now, and it works perfectly. The only problem is that you need to use a special mouse mat (supplied) that has a regular dot pattern that makes it easier for the mouse to "see" movement. It's OK, but just a little bit constricting, especially if, like me, you have a white table that the mouse finds it difficult to "read."

Anyway, it's got to be better than the crappy old mouse that came supplied with your ST. It costs £39.95 from Golden Image on 081 518 7373.

AUTOROUTE PRICE CUT

Last year the word was NextBase was going to kill the ST version of *Autoroute*, the computerised map program, due to piracy. Well, I'm glad to say rumours of its death were greatly exaggerated, and it's still going.

Indeed, it's just taken a price cut down to £70, which is less than half its previous tag. If you clock up a good few thousand miles a year in the old motor, it may well be worth giving NextBase a call on 0784 460077.

Steve Carey

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Macintosh

OOPS

There have been some unexpected consequences of Apple's decision not to include a maths co-processor into the Mac IIsi as standard.

The IIsi is the only member of the Mac II family not to contain this chip, and some applications are getting rather confused by the fact. *Studio/8*, an extremely popular 8-bit paint package, refuses to run on the IIsi, as does Microsoft *Excel*, a spreadsheet which, it is claimed, nine out of ten Mac spreadsheet owners use. The manufacturers of both applications were quick to realise the problem, and Microsoft already has a free bug fix, while there should be a IIsi-compatible version of *Studio/8* available by the time you read this.

Users who actually want the increased speed that the maths co-processor will provide will have to wait until the IIsi NuBus adaptor card arrives – it's scheduled to start shipping some time in December.

PROBLEMS, PROBLEMS

As if that wasn't enough, it transpires that System 6.0.6 (the version shipping with all the new Macs) is... er... well, 'not astonishingly robust' might be a polite way of putting it. System 6.0.7 is already shipping in the United States, but Apple has said that it will not be bundled with machines sold outside the USA. Instead, Apple are supplying a bug-fixing INIT. It's the first time in my memory that Apple has not released a version of the System simultaneously around the English-speaking world. So watch out if you intend to buy a Mac in the States: there shouldn't be any incompatibility problems, but who knows?

TROUBLES IN THREES

What, more? Yes, more. We saw our first production IIsi here a week or two ago (which at least proves that they are shipping), and we were rather surprised to discover that *HyperCard* 2.0 was not included. To get the product, you have to fill in a little card, and it will be sent to you. Why? Who knows...

And anyone who wants to use the new Macs to develop *HyperCard* stacks for other users can think again. It seems that System 6.0.6 and later will only run *HyperCard* 2.0 and later. Now, stacks created in *HyperCard* 1.2.5 (which over 95 per cent of Mac users have) can be used in version 2.0, but stacks created in 2.0 cannot be run on 1.2.5. So, until a hell of a lot more people start to upgrade to version 2, you won't have much of a market for your product.

Of course, this raises the whole question of compatibility, which is (or was) at the centre of Apple's philosophy. "As long as you stick to our programmers' guidelines," it said, "we guarantee that anything you write will work on any new Macs which we bring out." But since *HyperCard* 1.2.5 (which is written by Apple) won't run on System 6.0.6, hasn't Apple broken its own guidelines somewhere?

In fact, Apple is now having to face the fact that lots of software written for System 6 will not run on System 7 when it arrives, even if the software had been written to follow the Apple guidelines. According to one American developer I spoke to, this has to be the price that we pay for progress; no gain without pain, as they say. But this means that Apple will have to work even harder to persuade people that System 7 is a good thing: after all, would you upgrade your System if doing that meant that you had to upgrade all of your applications as well?

MACUSER SHOW

Talking of talking to people, the *MacUser* show was held on November 7-10. Sadly, there weren't many whizzy new products on show – and precious few Mac Classics and IIsi's, either. The whole Macintosh scene seems to have slowed down recently; it's almost as if people were waiting to see what the new Macs were like before deciding whether to support them in the future.

Well, now they know. And while there weren't many new products actually at the show, many of the people I spoke to said that they had new stuff waiting just around the corner. So, while some companies are switching part of their attention to developing software for Windows on the PC, the vast majority are still supporting the Mac with a vengeance.

What was at the show in large quantities was multimedia equipment. One stand had what must have been hundreds of thousands of pounds-worth of synthesisers, Macs, U-Matic video machines and editing equipment. And the stuff that they were producing was truly incredible. Suddenly, a fair bit of the power of systems like Quantel's *Paintbox* is in the hands of Mac users – for a fraction of the price.

YUPPIE CORNER

One product on display at the show is a must for all you yuppies out there. Called *Dynodex*, it's an address book program with a difference. Unlike most programs of this type, where data can only be exported to a word processor or printed out on standard sheets of paper, *Dynodex* is designed to output to special, pre-punched paper which can then be put straight into your Filofax (which is, of course, a registered trademark). It needs a laser printer or 'non-impact' printer to work (ie not a dot matrix), and it really is rather good. The database features are fine, it's easy to look up phone numbers and things on the computer and having a

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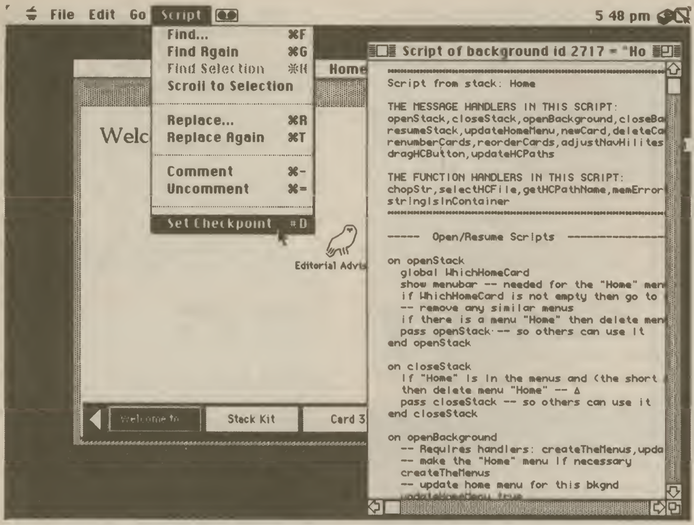

```
Script from stack: Home

THE MESSAGE HANDLERS IN THIS SCRIPT:
openStack,closeStack,openBackground,closeBa
resumeStack,updateHomeMenu,newCard,deleteCa
renumberCards,reorderCards,adjustNavHilites
dragHCButton,updateHCPaths

THE FUNCTION HANDLERS IN THIS SCRIPT:
chopStr,selectHCFile,getHCPathName,memError
stringIsInContainer


-----  Open/Resume Scripts  ---------------

on openStack
  global WhichHomeCard
  show menubar -- needed for the "Home" men
  if WhichHomeCard is not empty then go to
  -- remove any similar menus
  if there is a menu "Home" then delete men
  pass openStack -- so others can use it
end openStack

on closeStack
  If "Home" is in the menus and (the short
  then delete menu "Home" -- Δ
  pass closeStack -- so others can use it
end closeStack

on openBackground
  -- Requires handlers: createTheMenus,upda
  -- make the "Home" menu if necessary
  createTheMenus
  -- update home menu for this bkgnd
```

• *HyperCard 2: compatibility issues abound....*

printed address book should make you the envy of everyone at your local wine (or should that be whine) bar. Got a Filofax? Get a copy.

Dynodex is available for the princely sum of £89 from Softline: 081-642 4242.

POSTCARD FROM AMERICA

Okay, enough from me for this week. What's Morgenstern been up to...?

"They've struck again! There's a sly group of silicon tricksters pulling pranks in the Valley. Their latest repertoire is a spoof press release on Ted Nelson's Xanadu Project. Nelson is the 'father' of hypertext, and he's been pushing his vision of computing's future for years. His concept is the best, of course, and other implementations (ones that really exist) of hypermedia are brushed off. Don't even mention the word *HyperCard*. Here's a big byte of it:

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"A New Universe – No Kidding! This new way of using your computer, which we cannot really even describe, will permit anyone to access any data, anywhere, made at any time since Creation, all shared thru links forged of iron.

"Open HyperText Publishing means that we hope a lot of people are going to put out stuff that will be interconnected to other stuff, in all forms of data, including text, graphics, 3-D lab data, clips from old movies, digitised family vacation photo albums, and all other conceivable forms of information; all automatically cross-indexed in microseconds with no red tape or psychoactive drugs.

"Paradigm Warp. This is a new way of thinking about everything. It is wrenching to the mind. That's why this broadsheet doesn't really even tell you what it is. Dramamine™ should be included with every package. I'm getting sick now, just reflecting on even considering the possibility of pondering it.

"The Schedule

"Real Soon: We're just about ready to tell you what we're going to do! Full details of everything, with graphic colour photos (must be over 18).

"Sooner than You Think: Something will be released that shows we're serious about all this.

"Just a Little Bit Later: Everyone on the planet will own a copy and want to buy your stuff!

"While You're Still Young Enough To Enjoy It: Early developers could make Big Bucks with Xanthoma™ Rotostowage™ applications."

Ian Wrigley

There's more where this came from!

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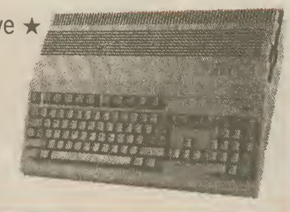

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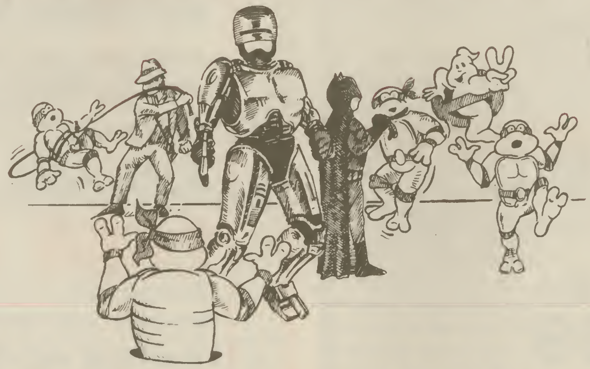

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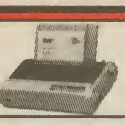

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WHOLE WIRED WORLD

A regular trip around the world with Steve Gold

SHOCK WAVE HITS THE US

Shock Wave is the name of a new US computer and games console magazine which, from its press release issued last week, sounds like it plans to cover almost all of the games/console industry in some depth.

Edited by Antonio Barnes, the first issue of the magazine is being offered free of charge to US residents, so the inclusion of a few international reply coupons from readers of *NCE* in the UK should obtain the first free ones on this side of the Atlantic. Barnes is enclosing a half-price subscription voucher with the first issue – making the magazine well worth sending off for.

Included in the first issue is a `hands-on' review of the Super Famicon and Super Mario Bros, as well as a review of the *Game Gear*, Sega's new hand-held games console. On the computer front, the magazine includes reviews of several of the latest games for the Atari ST and Commodore Amiga.

Contact: Z Publications, 2240 Mac Arthur Blvd., Suite 1400, Oakland, Ca. 94602, United States.

STATUS BBS GOES INTERNATIONAL

Status BBS in Auckland, New Zealand, has hooked up to the X.25 packet data network, meaning that subscribers to the BT PSS and Dial Plus packet data networks, as well as the Mercury 5000 packet network, can access the service on a local phone call basis.

While the cost of placing a call to Status is rather less than dialling direct to New Zealand, the charges can mount if you pipe a lot of data over the link.

Callers should place a packet data call to Status via the network user address (NUA) of A9-5301-9500-0013-13. On connection, callers will see the response 'Paxus Faxnet' and should log in using the Visitor option, and register as normal.

APPLE V APPLE

Remember the *Express* story regarding the legal row of the use of the Apple logo a few weeks back? According to the ST report on-line newsletter, if Apple Corps wins its lawsuit against Apple Computer, the latter may have to pay up to $200 million in royalties to Apple Corps, and may have to stop selling much of the Macintosh line of computers.

MOTOROLA ON A WINNER

Motorola has unveiled an radio frequency LAN system that will allow wireless computer networks to be installed in corporations and businesses. Called the Wireless In-building Network – WIN for short – the system uses standard radio signalling techniques to transmit data throughout a LAN.

A key feature of WIN is that different types of computers can be connected using the system. WIN is also billed as being 50 per cent faster than the industry standard 10 megabits/second Ethernet system.

Don't ask the price, as WIN isn't out yet – shipment is expected early next year, by which time the price will have been firmed up.

WORDPERFECT 4.1 FOR ATARI ST

As previously reported in this column, WordPerfect has released version 4.1 of its word processing software for the Atari ST, the package is effectively an `engineering' re-work of the previous edition, and includes several new features, as well as sorting out a number of bugs in v4.0.

Amongst the many new features are: support for large screen monitors; full directory listings for all disk types, including Ram disks; improved F-Sel support; and inclusion of the complete document path and name is now displayed in the window title bar.

Registered WordPerfect Atari users in the US are being encouraged to obtain the updated edition of WP for the Atari ST for $15 plus $3 postage and packing. Since I'm not too sure when the version will be shipping on this side of the Atlantic - if at all - it might be worth giving the company a call on 0101-83-800-222-9509 if you're at all interested.

Contact: WordPerfect Corporation Atari Products Division, PO Box 731, Orem, UT 84059-0731, United States.

SPECIAL OFFER ON GRAPHICS

Version 2.0 of Seurat, a graphics program for the Atari ST, will be launched towards the end of this year. A special pre-release edition of the package – two disks plus a 34,000 word users manual on disk –has been released by SK-Ware One for just $35.

The package allows users to create and edit Degas, Macpaint and Gem Img files of any size, and includes zooming and panning facilities within the editing module.

Other key features include support for a wide variety of printers, either integrally within in the program or – for the less well-known printers – as a separate printer driver modules.

Also available is a self-collating two-sided printing routine for printing the 34,000-word User's Manual on the Hewlett-Packard Deskjet and other printers in draft mode. The routine adds $3-00 to the package price.

Contact: SK-Ware One, PO Box 277, Bunker Hill, Illinois 62014, United States.

AMIGA ADD-ON ON HOLD

As previous reported, a German company called Medusa has developed an Amiga add-on unit that accepts Atari ST Rom chips – much as the A-Max add-on for the Amiga does. The cartridge unit effectively allows the Amiga to run all Atari ST programs as normal.

According to the ST Report on-line newsletter, Medusa was scheduled to show its product at the recent *World of Amiga* in Chicago, but was `advised' by Atari that legal action was likely if the system were sold at the show.

While Medusa withdrew from the show, the company promised to release a reworked edition shortly that would be function much as the Spectre Mac emulator for the Atari ST works – the user buys the emulation cartridge and then plugs in his or her own ST Roms.

Watch this space for further information.

FAX INTO VOICE MESSAGES

Berkeley Speech Technologies of New York has obtained a US patent for a new system that can translate incoming faxes into voice messages. While this new development will probably enjoy widespread use by visually impaired users of fax machines, it can also be used with the variety of voice mail services which are springing up around the world.

BST is planning to release a software package early next year that converts E-mail and fax messages in the spoken word. No pricing on the system as yet, but watch this space!

Also in the pipeline is a custom chipset that BST plans to sell to fax manufacturers. When used, the chipset will, BST claims, allow fax machines to speak the ASCII text from a fax page directly to the user!

CLEAR THINKING HITACHI

Hitachi Japan has developed a 10-inch thin-film transistor colour liquid crystal display for use in workstations. The screen has 870,000 pixels or three times as many as existing types.

According to the Japanese giant, the screen is as clear as cathode ray tube technology and is capable of displaying up to 4,096 colours on-screen at once.

As WWW went to press the price was not available, but Hitachi is in active discussion with a number of computer manufacturers. Expect to see the technology in use by next summer.

AT&T PHONE GOODIES

AT&T has announced a digital, tapeless telephone answering machine. The System 1337 costs $139.99 and comes in a case with a footprint of 10 x 10 inches and a height of six inches.

As supplied, the unit can record up to seven minutes of spoken word, and allows users to play back, repeat and skip messages without the need to wind the tape in either direction.

The unit is on sale now at AT&T phone shops in the US. Sadly, this writer wasn't able to buy one at Comdex earlier this month, despite phoning round more than a few stores.

What I did get, however, was a $89.99 unit called the CLI 64, a battery-powered calculator-sized unit that uses the caller line ID system - available on a growing number of a PABXs and planned for service on some BT exchanges 'real soon now,' to display the originating phone number of people calling you, while the phone is still ringing.

CLI works by generating a modulated signal on the phone line between the first and second rings, giving the phone number of the person calling, together with the date and time of the call. The AT&T CLI 64 stores data on the previous 64 calls.

If the calling phone number is on an exchange that does not support CLI, the unit displays an 'out of area' signal, or a variety of other messages, as circumstances dictate. Needless to say, the AT&T CLI 64 is not approved for use on BT or Mercury circuits in the UK. ■

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OPENING TIME

In the words of the immortal James Brown, "Haiiiiow!". To misquote the great Douglas MacArthur (it's smoke an Acorn for America week boys!) "I have returned!".

The caring, bonding, feeling, loving, gracious part of me would like to say thank you to all of my stand-ins. Luckily I left that at a pool hall in Buckhead so stuff it.

Time for serious business. It would appear that while I have been away the European parliament has passed some anti-piracy laws which have incensed 'industry figures'. I have just one comment on this matter – it's a big planet guys. This thought came to me as I typed a few notes into my (sadly now lost) NeXt portable. I was sitting atop the Peachtree Plaza hotel, in the revolving restaurant (cheers Mike) at the time. Let me tell you, 72 floors up is a long way. I was looking down on to a helicopter at the time and this reinforced the idea. It's a big, big planet with heaps and heaps going on. So stop bleating and get active.

In the deep south of the States, the Amiga is a, and I quote, "Cult machine which looks like catching on in a big way." Sadly, the ST is "not doing too well." Walking into a seriously games oriented store I was overwhelmed by PC, Nintendo, Sega, Neo-Geo and Turbo Grafix games while over in a corner were a few Amiga products. It's a big world.

And try this one out for a bile instilling piece of news; the Sega Mega is selling at $189.99. With a current exchange rate of $1.98 to the pound this should mark the price at £95.95. Strangely though the English price for the machine is £189.99. What is going on in the world of market forces?

A final thought; the day after I get onto the plane, first class of course, Geoff Howe ups and resigns. Spooky or what?

Well that's enough of that banter. Get the hell out of this column and don't ever come round here begging grits and biscuits again.

Tim Smith's CENT

Write to 30 Monmouth Street, Bath BA1 2BW (if you dare)

TALE SPIN

Computers seem like methodical, organised gizmos, but they have a dark, chaotic side. It's this electronic twilight zone that swallows your data, crashes your system and causes you to become technophobic.

To err is human, but it takes a computer to really screw things up. If you have any weird, wonderful or wacky computer fables, tell them to Tale Spin and riches could be yours. (Well, maybe a bit of software, if they're really good)

AND HE DROVE THE FASTEST MILK CART

ERNIE, the electronic brain behind the biggest lottery in the UK, the Premium Bonds, is secretly sitting on a cash lump sum which could equal the GNP of a small country.

Apparently there is £8 million in unclaimed prize money in a bank account in Ernie's name. It's all sitting there, probably accruing more interest than anyone in this office could hope to make in six lifetimes waiting for a winner to come along and pick it up. The dosh will stay there forever, or at least until the Premium Bonds office manages to get in touch with all the winners who never bothered to check the papers (whichever comes first what with time being relative and all if you see what I mean).

As part of Centrefold's caring-for-you policy, we can now let you in on the big secret – YOU haven't won anything! In fact, you have adhered to one of the golden rules in life which is that the Premium Bond two numbers after yours was the nearest you came. Tough!

But Centrefold is also an ecologically sound title and we don't want all of those nasty pieces of paper littering up the place so... Send all those unwanted Premium Bonds to: Tim (Here it is on a plate for you my dear boy) Smith, Centrefold, 30 Monmouth Street, Bath, Avon.

IT'S ALMOST ALWAYS HUMAN ERROR, DAVE

A recent issue of big sister magazine *ST Format* featured a jolly little program on the cover-disk. Called HAL9000, it played a short digitized sample of the fearsome 2001 computer announcing, "I'm completely operational and all my circuits are functioning perfectly" when you reset your system.

A jolly wheeze for most, but one poor fellow found it all too much to cope with and phoned *Format's* offices complaining that "my computer's not operational or perfect at all. The modulator's fallen out and the screen's all messed up". Attempts to explain that the program was merely a sample player fell on deaf ears. "But it's lying" said the sad little chappie. In desperation, one member of the *Format* team tried an analogy to explain.

"When a game says YOU ARE DEAD, you're not really dead are you. It's the same thing!"

"Ah!" replied the desperate laddy, "but none of my games say that. They all say GAME OVER and then it is!"

Er....case dismissed, m'lud.

OUT OF TOWN TOP TENS

Researched by Dave [the Dandy] Golder

Leicester must rate as the most parochial place we have turned tofor this colomn so far. Just look at the amount of new entries. These Leicesterians obviously have strong ideas about their gaming requirements. And the place they go to is Telegames, (tel: 0533 813606) owned and run by Peter Mortimer, who finally compiled this week's chart:

SEGA MEGADRIVE TOP TEN

1) *Strider* – Hacking 'n' chopping to the top of the chart. .
2) *E-Swat* – Cops of the future in disappointing arcade conversion.
3) *Ghouls and Ghosts* – spooks and ladders.
4) *Golden Axe* – More hack'n'chop.
5) *Dynamic Duke* – Great name, great game.
6) *Burning Force* – In with a bullet.
7) *Rainbow Island* – cutsie wootsie and tricky as hell.
8) *Super Monaco Grand Prix* – Vvvrrrmmm!
9) *World Cup Soccer* – Still doing the business.
10) *Thunderforce* – Scrolling fast-action extravaganza.

8-BIT TOP TEN

1) *Mario 2* - –The famous computer character returns.
2) *Chase HQ* – Excellent classy car chase game in which you get to drive a Porsche 928. If only...
3) *Operation Wolf* – Ultra violent, ultra good.
4) *Double Dragon* – Twice the amount of Ninja turmoil.
5) *Batman* – Holy film tie-ins.
6) *World Games* – but does it feature boycotts for realism.
7) *Wonderboy Maze* – Get lost.
8) *Kung Fu Superkids* – High kickin' action.
9) *Fire and Forget* – Fast action cars'n'crashes.
10) *Silent Service II* – Not a game about Jimmy Connors after a tracheotomy.

THE CHARTS

This week's Bleeding Charts club entry comes from that great film making double act - the Lumiere Bros. Our happy medium, Madame Zara Von Singt managed to contact les freres Lumiere last Monday and this is what they said...

1) *Robocop* – zees iss a grreat film et ze geme iss cool too.
2) *Indiana Jones and the Temple of Doom* – nuff zed.
3) *Batman* – zat Michael Keeton, he's a screeeeem.
4) *The Spy Who Loved Me* – Cubby Broccoli vot a guy.
5) *Gremlins* – Gizmo vos always our fave cherecter.
6) *Aliens* – Zigoruney Veaver, a star, a star.
7) *Howard the Duck* – vell ve liked de movie.
8) *Total Recall* – veird geme, veird film.
9) *Predator* – Arnie again, he's a real hunk n'est-pas?
10) *Rambo* – ze sinking voman's Sam Fox.

THE TOSH TEN

Every week there's rubbish, utter garbage and wibble. But this week there's tommy-rot, mindlessness, and idiocy. The Tosh Ten proudly presents 'Ten Things Freud Would Have Said About Softwareææ

1) *Autoroute* – an attempt to re-target neurosis.
2) *Fish* – a highly potent sexual symbol.
3) *Personal Nightmare* – a healthy outpouring of sexual desire.
4) *ESWAT* – a anagram of sweat. Very sexual in nature.
5) *Golden Axe* – Mmmm, a complex sexual symbolism.
6) *Fire and Forget* – forgetting is impossible, this game is a feeble attempt to present blocking transferences.
7) *Hollywood Strip Poker* – Nothing to say here.
8) *Fun School 3* – a deeply disturbing illustration of frustrated childish desires.
9) *CP/M* – a meaningless word hiding a sexual confusion.
10) *Lotus 1-2-3* – Lotus relates to position. 1-2-3 is a very short time.... deeply symbolic.

TREFOLD

Letter Spray

Want to see your name in print? Then write to Centrefold. This week's replies by the Great One who has returned.

This is the section of Centrefold which gives you the reader the chance to air your views. Unlike the great and good HFW, I don't have thousands of crisp fivers to chuck around the place. I do have the occasional prize however. So, get writing.

Dear whoever it is this week,

What the hell is all this rubbish about Tim Smith being in America anyway? You must think that we're really stupid. It is obvious that you have just been changing the names on the Centrefold and that Tim Smith has been writing the stuff all along. Ken Mosely, Tarquin St John-Sprout, Jeanette Brashier, and Mandlebrot! I ask you. The whole thing is obviously a desperate attempt to liven up a boorish, unfunny, childish space filler. Why don't you just cancel the entire thing?

Yours MA Lutyens, Chislehurst, Kent

Dear MA,

Well thanks a bunch. Welcome back Tim. Nice to have you here again, we missed ya big guy. Thanks a great deal. So, was I in the USA or was I not? Has this entire last few weeks been a marketing ploy? What do you think? Write in and tell me. As for you MA, frankly I don't care for your tone, your style, your attitude or your handwriting. Get yourself a printer, and if I ever catch you reading these pages again be prepared for an on-going head-ripped-from-shoulders scenario. Get it?

Dear Tim,

I hope it's you answering the letters this week because I have a very personal question to ask. Do you really have a NeXt portable or is it just something you write to make yourself sound more impressive than you already are (creep, creep)? I only ask because I haven't heard any mention of the machine in any other magazines. I would have thought that it would be a big story and I can't believe that no one else has one. Please clear up this problem for me.

Yours Cheryl Brewer, Truro, Cornwall

Dear Cheryl,

HAD. Had is the operative word here. Up until a couple of weeks ago I had a NeXt portable. In fact it was the only one in the world; it probably still is unless the power-crazed, jumped-up, pig ignorant traffic cop who stole it from me has trashed it. The reason you have not heard anything about it was because I was writing a special report. I won't say who for but it wasn't NeXt. Sadly now that the little baby has fallen into the hands of someone who probably thinks it's a weird microwave I have been informed that no other such machines are planned. By the way, if you were even thinking about calling me a liar... well it doesn't bear thinking about does it... Cheryl?

Dear Tim,

I would very much like to meet with you in order to discuss some problems we have been having with your on-line turf account.

As you know our system is one of the most highly developed in its field anywhere in the world. By using a simple swipe card in one of our many home terminals it is possible to make investments in nearly any sphere you wish. But you already know this. What you probably are not aware of is that it is so sophisticated that it has already frozen your account, black-listed you with every other analyst of statistical probablity and chance in the country, and attempted to debit your personal banking account. I say attempted due to the fact that your bank also appears to show a solvency problem on your part.

I trust that we can come to some mutually agreeable arrangement before next Friday at 11am. If this scenario is not attained I will be forced to take recourse to the Jerusalem Brothers.

Yours DD Vernon, Twyford, Hampshire

Dear DD,

Indeed yes your betting system is impressive in its technological advancements. The Jerusalem bros on the other hand are not. While it would take me a few months to hack your DEC PDP11 mainframe in order to collect evidence relating to your personal embezzlement practices, sexual pecadillos – there's more than one reason to stay at a race track – and general mismanagement, it would only take me two minutes to hack the pathetic bros. Don't hassle me freak.

NEXT WEEK. . . NEXT WEEK. . .NEXT WEEK. . . NEXT WEEK. . .

Next week I will have recovered from jetlag; Andy Editor and Graeme Publisher demanded that "Get back into the *u*k*n* office by 8:30" when my flight got in at 6 am. This means that in a week's time there will be:

● Competitions ● I Wish I'd Said That ● Tales Spin ● Letter Spray

● Opinion, News, rubbish, lies, freak-headed world views, monstrous libles, fetishes, ducks and Dr Drenal's Membership Ointments!

●The American trip in fool (*fool being the operative word, eh? – sub*)

Until then it's keep your feet in your shoes and your head off my shoulder. Keep your bottom in your undies and your nipples in your vest. See you, same place, same time, same spot on the dial. (*Is that enough to get people to read this tripe again – Sub?*)

DESPATCHES

Every week we bring you the best from around the world. What's the hottest machine in Peru? We'll let you know. What's selling best in Croatia? Look here for the answer. This week we bring you the return of Joe Sixpack from the USA.

Yo Dude!

What a fine time we had! What the hell happened to ya boy? The last thing I remember in full is missing that meeting with Wozniak. After that it all goes a little hazy. Anyway Lindybob and my good-self decided not to bother looking for you once you got that far south.

We lit out for Seattle for a meeting with Burl X Sangster the programmer and black civil rights activist. Burl has been working on a new spreadsheet system which he calls Orchid 6-7-8. As he so rightly said just after his studio was raided by a bunch of dark suited heavy types; "Screw look'n'feel man, just screw it. I mean did Chuck Berry ever sue the Rolling Stones? Did Robert Johnson's estate ever git litigious with Eric Clapton? Nope. They accepted it. So, if I want to bring out a program which takes the best from extant software and adds to it then why the hell shouldn't I? It's a first amendment issue if you ask me."

Strong views indeed. In fact the argument surrounding look and feel is brewing up a storm over here with more sides being taken than a over-endowed dodechahedron.

After spending an hour or so with Burl [he's not a drinking man so we had to head out if you see what I mean]. We crammed into the old jaloppy and headed out to the Philadelphia metropolitan area. Lindybob adores the city of brotherly love for some reason. Philly is the home of many wonderous computer people, one of the more impressive being Mary Bukowski famed for her work in nanotechnology. She is currently working on an engine which is only 150 microns thick. It is intended as the heart of Japanese soda fountains.

That's all for now dude. Hope you're ok. Lindy-Bob says "Very hi!". Steer clear of Jose.

FROM THE ARCHIVE

Those who ignore history are condemned to repeat it... or something like that. So here we go with a slice of computing history. What was happening this time last year?

QUEEN IGNORES HACKING

There was no mention of the much debated computing hacking bill in Lizzy I's speech to Parliament. It is not known what the protector of the faith actually thought about computing (she is said, by a friend of mine called Bernie Bastard from Bermondsey, to be an expert at Stunt Car Racer on the CPC) because her speeches are written by the cabinet. The lack of computer mention was received with some shock and chagrin by such campaigners as Tory MP Emma Nicholson.

NAUGHTY NAUGHTY BLUE

IBM admitted that it had sold used computers as being new and that it had certified foreign built machines as having been made in the USA. This all came to light after IBM filled in some order forms for a deal with Uncle Sam [the US govt] himself. The megacorps claimed that the claims made on the form were due to an administrative error rather than to any serious underhandedness... now what was it that Mandy Rice-Davis said?

ONE SMALL STEP...

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◆ Announcements

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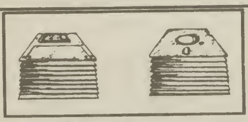

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◆ Personal

I'D love to hear from PS/2 users all over the world. Pirates keep off! I'm into Pascal, BASIC, C, dBASE and assembly, games, chess and graphics. Write to: Eddie Nwabuoku, C/o Dr E T Nwabuoku, Dept of Theatre Arts, UNIBEN, Benin City, Bendal State, Nigeria. Hi to Patrick Brown and Paul Turton (wherever you are)

◆ Wanted

WILL pay up to £500 cash for best offered Atari ST system. Telephone 0495 272 358 anytimee between 4 pm and 10 pm.

USER guide for Honeywell Microsystem Executive (COS-86) or FCOS-86 (Ferranti). Farnborough 0252 543 122

USER guide or any info. for Honeywell printer type S11CQ. Farnborough 0252 543 122

USER guide (digital research) for concurrent CP/M-86. Farnborough 0252 543 122

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ST contacts from UK, Europe, USA, anywhere just write to Steve, 205 Turnberry AVe, Ardler, Dundee, Scotland, UK.

CAN anyone help me obtain PC Ditto for the Atari ST? C Allen, 52 Boverton Dr., Brockworth, Glos., GL3 4DA

F16 Combat Pilot enthusiast seeks ST contacts, beginners of experienced pilots. Write to Clive, 51 Longdales Road, Lincoln, LN2 2JR

AMIGA PD wanted. Send disks to: Paul, 112 Eyrescroft, Bretton, Peterborough, UGH PE3. Disks returned with list. Blank disks 60p.

ANNALS of Rome computer game for Amiga. Will pay £10. Tel Blackpool 0253 86731

ATARI STE printer driver for serial 8056 thermal printer. Is there one or can you help me? S Hiscocks, 33B Stanwell Rd, Penarth, S. Glam.

WANTED operating instructions for VCR Sanyo model no 9300 PN alsto Ricoh Syncrofax RP. Bill, Bognor 829 171

WANTED Amstrad 6128 with colour monitor. Any condition - cash waiting. Phone 06 333 5493 anytime.

WANTED: Multiface ST. Also Atari ST games urgent! Super sprint, Arkanoid II, Defender O/T Crown, Populous, Test Drive 1 & 2. A Harvey. 10 Polweath Road, Penzance, Cornwall, TR18 3PN. Good money paid.

STUDENT looking for MAC-SE/SE-30, used or new, reasonable price. Call 02744 728 484 evenings.

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MGT 2-Face for Spectrum with manual etc. Tel Andrew More 081 651 25229 eves.

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JESUS IS the answer. He may use you! Wanted a plotter. Anything considered. Buy or exchange for my good wood lathe. Telephone 0840 Camelford 2133 901.

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ATARI 520 STFM 1 Meg disk drive. No software please. Whitby 0947 810 914

STE compatible version of Defender of the Crown wanted. Any ideas? Cash for working game. Tel. Susie on 0646 683750.

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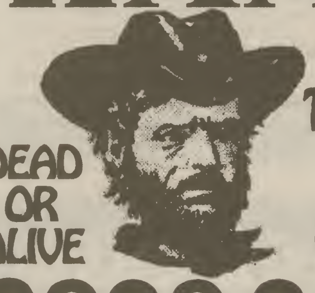

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BEAT THAT BUG

Don't tear your hair out or stay up all night trying to make your program work – see what Mary Branscombe recommends for those killer programming blues.

Whether you are prototyping a program or implementing a known algorithm, you will soon reach the point where you have a piece of code that works – almost. Whether the faults are obvious errors or subtle problems found by obscure test data, the techniques are the same. Few programs are written without at least one bug that needs fixing, but some simple guidelines can make the process a little less painful.

Testing and debugging a program should not be a last minute process, or even separate from the central development of the code; most bugs should be corrected or removed before the program is run. Bugs only remain in the program because the programmer doesn't know that they're there. If you notice a bug before you try to run the code, you should correct as you develop the code; if you don't find the problem until you run the code, correction of a bug seems more like improving the code.

The actual syntax errors and error codes produced by a faulty program will be specific to the language and the environment, but most bugs fall into general categories. Many bugs will be the result of a typing error, but some mistakes may reveal fundamental errors in the program. The level of support offered for debugging varies with languages and environments and it is worth using any debugging facilities available. Removing one bug, especially if it is a syntax error, is likely to reveal several more!

If a bug is caused by a typing error the problem will usually be reported as a syntax error – the language obeyed by the computer has a very strict form or syntax and any command errors will cause problems when translating into machine code. Many languages will report the location of a syntax error and this is the point at which the compiler or interpreter ran into problems, not where the actual error will be found.

COMMON MISTAKES

In the code example (see box), the missing quote is after the word "world" on the third line, but the parser in the compiler or interpreter reading in the code will take the words "hello world print" as the print statement and will then complain about the second "hello" as an unknown quantity; an undefined variable or constant may be reported, rather than a syntax error. Some environments may complain about the third quote as unmatched or offer intelligent syntax editors that can detect and supply missing punctuation or constructions which can be a great help.

Another common mistake, especially in languages that allow lengthy variable names, is the incorrect spelling or typing of one occurrence of a variable. Again, some parsers will detect unique variable names that are used only once in a program (often known as singleton variables). If a function or procedure is changed, it is easy to forget to update all calls to the procedure, leaving some with incorrect variables and parameters.

Some bugs are due to incorrect specification of mathematical functions or the misuse of built in functions. The write or print statement in many languages has an parity of one (it accepts only one parameter, although this can be a list) – specifying multiple arguments for such write statements is a frequent mistake. Confusion between real numbers and integers can also cause problems when using mathematical functions.

An incorrect loop to print a greeting ten times:

```
FOR I:= 1 TO 10
PRINT "HELLO WORLD
PRINT "HELLO READERS"
NEXT I
```

An incorrect listing to add a column of ten figures and print a running total:

```
FOR I:= 1 TO 10
PRINT "INPUT NEXT NUMBER"
READ NEXTNUMBER
NEXTTOTAL := TOTALSOFAR +
NEXTNUMBER
NEXT I
PRINT NEXTTOTAL
```

Although omitting punctuation like commas may be a simple typing error, missing out or misplacing closing brackets may indicate that you are not quite certain about the flow of data and control within a program. If parts of constructions are omitted or misplaced (misplacing the end of a loop or the alternative command for a conditional selection is particularly common) this may indicate a fundamental misunderstanding of the control flow.

The second box shows a fragment of a code listing to add a list of figures and print a running total, but the print statement has been left outside the loop. If you put a command outside the loop, when you actually want it to be obeyed every time the program goes through the loop, then you are not sure what you want repeated, or you have not understood how a loop works. In either case, a diagram of the flow of control for the program is the best place to start.

The classic picture of debugging depicts late nights, strong coffee, fluorescent marker pens and a sheaf of computer printout. Printouts are certainly helpful, if only because it is often easier to read a listing at length on paper than on screen. Similarly, you can use a flourescent marker to highlight the location of the variable that holds the value that you are interested in, so that you can see the flow of data through the code. This may seem trivial, but problems occur because the programmer cannot visualise the program in action.

TAKE A BREAK

If looking at the code and considering what is going on in the program does not enable you to solve the problem within half an hour or so, then get another listing or another cup of coffee, or simply stop for a few minutes. Leaving the program overnight is advised if you come to a standstill as mistakes are much easier to spot with a clear mind.

Some simple mistakes can be remarkably difficult to see, perhaps because you expect the punctuation to be in the correct place and find it hard to see that it isn't there. Showing the listing to another programmer is usually the best way to solve this problem. If the problem is more complex, explaining what the program is supposed to do, and what it actually does, to someone else will again help.

If none of these methods provide a solution, then you must clarify your mental image of the program. The behaviour of any program is determined by the flow of control – which of the possible commands in the program will be executed next – and the flow of data – what values are in what variables. If you predict the order of commands to be executed and the values to be found in the variables at each stage, you can then compare the prediction to the computer's execution of the code. Thus the bugs will be found where your predictions are wrong. Whether the code is not doing what you believed it would do or your prediction was incorrect, you will located the bug and can start trying to solve it.

If the output of the program is not what you expect or the program terminates unexpectedly, then you should run the program on different data to compare the outcome. If the data causes the problem, then run the program on a subset of the data and run the data through a subset of the code, to see where it is.

DIFFERENT VIEWS

Good environments will offer various debugging tools, geared to the peculiarities of the language that you are using and it is well worth learning how these work. Most of these are based on the notion of breakpointing – setting points in the program where the contents of the computer's memory and registers are displayed. Code animation provides similar information from various viewpoints while the program is running.

Perhaps the best way of dealing with bugs in your code is to write clean, simple structured code, so that any mistakes can be seen easily. ■

DEBUGGING TIPS

- **A bug is only a bug when you don't know what or where it is. Most can be solved by looking at the program and going through it more rigourously.**
- **Most bugs are due to simple error and mistyping.**
- **More complex bugs may reflect some misunderstanding about what the code is supposed to do or how a construction works.**
- **Syntax errors are rarely where the machine thinks they are.**
- **One bug leads to another; as soon as you have fixed one bug, you will often find that five more appear!**

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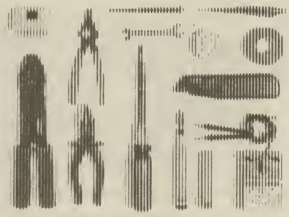

At last a chance to plug into what you drive into. Keith Pomfret turns the company Rolls into a Power Station with an on board inverter that allows you to fit an ordinary 3-pin plug on your dashboard.

A trip to sunnier climes on the overland bus brings you on board movies, hot drinks and even cooked food. A close examination of the latest Neoplan coach revealed that instead of hanging huge generators off the frame, the mains power was provided by a set of inverters.

With these coaches costing huge (at least six figure) sums, it isn't the cost that dictates the power supply but the size and reliability. The *Express* budget didn't stretch to a skyliner coach, but with the help of Maplins we were able to gather up an inexpensive kit that will turn the stuff from under the bonnet into the stuff from the mains.

To make this magical transformation, the inverter takes the 12 volts direct current from the car's electrical system and inverts it to alternating current.

A 20:1 transformer boosts it up to mains voltage of 240v. Swings and roundabouts dictate that you'll not be able to run a 20,000 watt sound rig from the inverter. A 60w output is about the most that can be hoped for unless you beef things up by using more batteries and components.

In a simple in-car system, the 240 volts from the inverter might be used to run a computer, or any of the many low current drain appliances.

For an in-car installation, it's a good idea to add an extra battery to the car and have the two batteries interchangeable between inverter and car electrics. A simple switch will then allow you to interchange between charging the battery on the car's circuits and discharging on the inverter's.

The kit comes complete with everything that's needed except for a box and costs £64.95 including VAT. It isn't a simple kit and should only be undertaken by a competent electronics DIYer or someone who doesn't mind wasting the £65 or so.

An inverter produces mains current so remember when you're testing the finished product that it can bite – you should treat the completed inverter with the same respect as you treat any live 240v socket that you're working on. If in doubt ... don't.

The kit comes in a box with a constructors guide and all of the necessary parts bagged ready for the job. There's a list of components and before you spread them all over the bench you should get several bags ready to place parts in as you check them off the list.

Open each bag separately and note the contents. Tick the parts off the list as each bag is checked place the parts from it in a fresh bag and keep the bench clear. If anything is missing, check the bags again. If it's still missing, contact Maplin before you continue.

For this job you'll need the normal pliers, screwdrivers, wiretrimmers etc, and a multimeter to test everything. Also make sure that the requisite volts amps and watts are as ordered. A soldering iron with a fine bit, good light and a supply of patience will see you through.

For a full in depth look at how to go about constructing any of the Maplin kits, there are a series of books available that go through the rudiments and theory as well as the soldering. The £2.95 that the appropriate book adds to the cost is well worth the investment. When building the kit, I found the book indispensible.

First things first, take the PCB that comes in the kit and examine it for signs of damaged tracks or 'shorts'. It is a fairly simple single sided PCB and the quality of the review sample was good, with no whiskers or breaks. The integrity of the circuit board was fine when connections were checked using diagnostic equipment so I was ready to warm up the iron.

The parts that are attached to the PCB were scrutinised and with everything intact the job was laid out on the bench.

To allow any one that wants to build it in tandem with Circuit City, I've unplugged the iron and I'm going to sit and twiddle my thumbs for 14 days to allow you time to send the Christmas money to Maplin to get your own kit. ■

A FORTHCOMING PROJECT

For those of you out there d-d-d-digitally sampling everything from the whoopee cushion under a maiden aunt to the pistons of the Flying Scotsman, there's a bit of good news.

If you've ever tried to sample broadcast sound from the TV (with the permission of the TV company of course!) you'll know what a load of krshhtthhhh gets into the nasty analogue sound on the box. To find a cheap way around that we've decided to build the under £90 NICAM stereo box.

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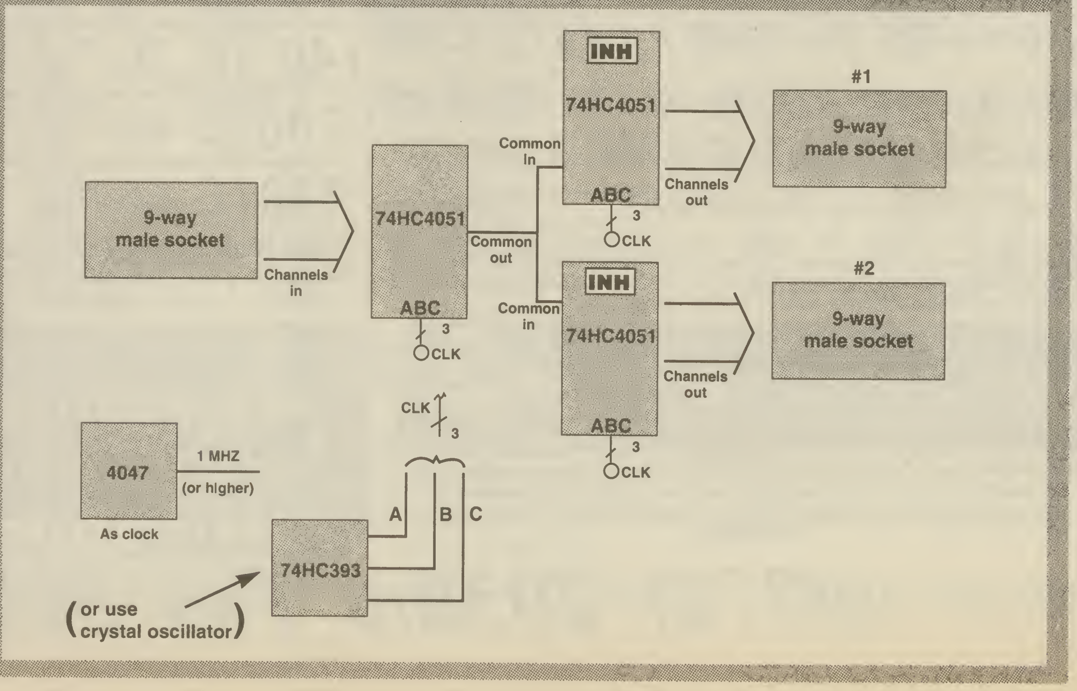
EXPERIMENTS WITH MICE

When I sloped off to the Soviet Union to try cabbage soup first hand and find out if a Soviet soldering iron burned the fingers as efficiently, Amiga afficionado Pat (Is he real or is he Memorex) MacDonald stepped in at the eleventh hour to fill my spot.

The mouse sharing device that Pat described set some of you thinking and several of you sent me plans and diagrams for improved better featured mouse fettling devices. They were all good, but one stood out as being slightly mega.

As it came from a commercial enterprise, I'm not allowed to advertise them (I've lost the piece of paper really so if they'll FAX me again, I'll give them a credit.). here it is in all of its glory. All the bits are marked and it goes without saying that neither I nor anyone I know will take responsibility if you build it and it goes terribly wrong.



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TEXAS T199/4a - Peter Walker, T199/4a Usr Gp UK, 24 Bacons Drive, Cuffley, Potters Bar, Herts EN6 4DU. 0707 873778

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Cix	081-399 5252	V21/22/22b/23
Clapham Junction	0234 64261	V21/22/22b/23
Cliff's Corner	0502 518274	V21/22/22b/23
Club 1512	081-204 8755	Hst
Co-op Board	081-316 6488	V21/22/22b/23
Co-op Board (crs)	061-832 1961	V21/22/22b/23
Co-op Board (nicc)	0509 826339	V21/22/22b/23
Co-op B'Mouth	0202 532701	V22/22b
Co-op P'Mouth	0705 754851	V21/23
Codeomatic Bbs	0472 250690	V21/22/22b/23
Communitel Demo	081-968 7402	V23v
Compass!l	0942 896661	
C'center Opus	071-928 2005	V21/22/22b
Computers 4 Christ	0926 428294	V21/22/22b/23
Connection	071-978 8540	
Connections	081-903 1309	V21/23/23v
Connex	071-431 3922	Hst
Consett Forum	0207 506179	Hst
Corby Town Opus	0536 205113	V21/22/22b/23
Cornwall Gate Opus	0752 848806	V21/23
Cp/m User Group	0753 868196	V21/22/22b/23
Critical Mass Bbs	0727 56939	V23/23v
Crown Green	071-245 1512	V21/22/22b/23
Crystal Tower	081-886 2813	V21/22/22b/23
Cure	0604 27865	Hst
Cv Database Bb	0427 810211	V22/22b
Cymrutel	0492 49194	
Cynotel	081-346 2816	V23v
D.i.e.	061-434 9907	V21/22/22b/23
Dabbs	0846 693067	V21/22/22b
Dambusters	0203 333195	V21
Dark Crystal	081-207 2989	Hst
Dark Halo	0392 434477	Hst
Dark Side	0446 33729	V21
Darkhaven	0604 413716	V21/22/22b/23
Data Network	081-478 5464	V21/22/22b/23
Datasel/wanderland	081-680 5330	V23
Datasoft Opus Bbs	0460 54615	V21/22/22b/23
Datatrade Qbbs	0536 725180	Hst
Dbase User Group	0532 842213	V21/22/22b
Dce Board	0296 88165	V21/22/22b
Dcs	081-879 7578	V21/22/22b
Deep Thought	0634 683696	Hst/v32
Deeply Wonderful	0455 557261	
Desert	0244 550332	V21/22/22b/23
Diamond Opus	0791 86504	Hst/v32
Diggertel #1	0925 411265	V21/22/22b/23
Digital Matrix	021-705 5187	V21/22/22b/23
Direct-line 1	081-841 1847	V21/22/22b/23
Direct-line 2	081-842 2030	V21/22/22b
Domain Bbs	081-773 2422	V22/22b
Dragon'S Tower	081-202 0709	V21/22/22b
Dunedin Blackhole	031-669 2974	
Dwarfen Realm	0376 501036	V23v
Ebbs-1	0274 541156	V21/23/23v
Eddie'S Bbs	0635 71324	V21/22/22b/23
Empirical Research	0543 675158	V21/22/22b/23
Empyrion	0792 580781	V21/22/22b/23
End To End	0376 84644	V21/22/22b/23
End Zone	0524 752245	V21/22/22b/23
Engineers Workbnch		
	051-327 7036	V21/22/22b
Eureka Gateways	0603 250689	V23/23v
Eureka Ii	081-683 0629	V21/22/22b/23
Exchange S/w	0767 5051	V21/22/22b/23
Eye-2	0525 715789	V21/22/22b/23
Fal Opus	0736 794827	V21/23
Falcon Bbs	081-527 4165	V21/22/22b/23
Family Skeletons	0480 812097	V22b
Fen Tiger	0954 210692 Rb	V23v
Fido Uk1	0734 713909	V22/22b
Firm	0273 513872	V23v
Flight Path	081-759 1957	V22/22b
Focus International	0905 795002	
Focus Tbbs	0303 42690	Hst
Focus Uk	0905 774477	V21/22/22b/23
Forth View	031-660 3474	V21/22/22b/23
Forum-80 Hull	0482 859169	V21
Fox'S Den	0689 27085	V21/22/22b/23
Free Net One	0767 51972	V21/22/22b/23
Freelance Lynx	0480 406261	V21/22/22b/23
Friday The 13th	0642 224833	V21/22/22b/23
Fuzzy Logic	0634 200707	V21/22/22b
Gabbs	0705 524805	V21/22/22b/23
Gallery Qbbs	081-847 2795	V21/22/22b
Game Over	0752 848070	V21/22/22b/23
Games Online	0273 699200	
Gaslamp	0706 358331	V21/22/22b/23
Gaugonzola Bbs	0453 511112	V21/22/22b
Gnome At Home	081-888 8894	V23v
Gods	081-994 9119	V21/23
Golly!	0734 320812	V21/22/22b/23
Goobtel	0602 706307	V21/23
Good Life	081-541 0187	Hst
Gopherit'S Box	061-320-3208	V21/22/23
Gourmet	0474 536654	V21/22/22b
Grainstore	0905 770198	V21/22/22b
Grenadier	0825 762803	V21/22/22b
Hacker'S Delight	0702 523853	V21/22/23
Halfwits Bbs	0272 340310	V22/22b
Hamnet	0482 465150	V21
Harlequin	061-945 3612	V21/22/22b/23
Hastings Bbs	0424 717919	V21/22/22b/23
Hawk'S Castle	0344 411621	Hst
Hazzard Bb	071-737 0505	V21/22/22b/23
Health-data	081-986 4360	V23v
Heartbeat	0734 352032	
Hilary's Board	0277 233468	V21/23
Hot-air Opus	0579 70347	V21/22/22b
Humber Bridge	0482 850785	V21/22/23
Ichthus (trinity 3)	0734 461466	V21/22/22b/23
	0903 700771	V21/22/22b/23
Index Linked	0227 770403	V21/22/22b
Intel Ace	0832 73003	V23v
Islington Bbs	071-704 0760	Hst
	071-226 1248	V21/22/22b/23
It Contacts	0482 500286	
Jabulon Bb	0254 59352	V21/23/23v
Jersey Bbs	0534 37779	V21/22/22b/23
Jersey Opus	0534 39389	V21/22/22b/23
Jocks Away!	031-225 5368	V21/22/22b/23
Jolly Fisherman	0754 67796	V21/22/22b/23
Jolly Roger	081-742 1640	V21/22/22b/23
Jusavo	0324 32414	V21/23
Just The Place	0705 258694	Hst
K-wood	0608 83458	Hst
Kashmir'S Bbs	0472 347882	V21/22/22b/23
Kernow Bb	0209 821670	V21/22/22b/23
Key-board	0908 668398	Hst
Keydata	081-676 0072	V23v
Kidlington Bbs	0865 56703	V21/22/22b
King Of The Castle	0233 620228	V21/22/23
Kirklees Opus	0484 665415	V21/22/22b/23
Kleopatra's Pyramid	0602 384281	V21/23/23v
Komputer Knldge	0844 274066	V21/22/22b/23
Kybernesis	081-673 7294	V21/22/22b/23
Labyrinth	051-724 4458	V21/23
Lamplight Qbbs	0705 811531	V21/22/22b/23
Laser Tbbs	0532 438430	V21/22/22b
Lau'S Ql Bb	081-751 6096 Rb	V23v
Lightfinger's Place	0202 485723	V21/22/22b/23
Linelight	0580 212043	V23v
Linx Bbs	0522 511277	V21/22/22b/23
Liquorice Allsorts	0633 279985	
Liverpool Mailbox	051-428 8924	V21/22/22b/23
Liverpool Ros	051-931 4271	V21/22/23
Loch lomond	0389 55762	V22/v22bis
Loft	0442 230461	V21/22/22b/23
Log On In Tynedale	0434 606639	V21/22/22b/23
London Bb	081-455 6607	V21/22/22b/23
London City Mag	081-468 7648	V21/23/23v
London Connexion	081-667 1313	V21/22/22b/23
London Embassy	081-366 1778	Hst
London Guest Hse	081-748 0974	Hst/v32
London Mail Centre	081-534 1200	V21/22/22b/23
London Metropolis	081-519 1055	V21/22/22b/23
London Underground		
	081-423 2233	V21/22/22b/23
Loony Bin	0703 787489	V21/23
Mabbs	021-444 8972	V21/22/22b/23
Mach II Bbs	0242 260 685	V21/22/22bis
Mactel Hq (gm Box)	0602 455444	V21/22/22b/23
Mactel Metro	081-543 8017	V21/22/22b/23
Mactel Phoenix	0473 610139	V21/22/22b/23
Madness Bbs	0603 300947	V21/22/22b/23
Magic Castle Bbs	021-430 3761	V21/22/22b/23
Magic Mushroom	0361 83641	V21/22/22b
Magnum	0274 547006	V21/22/22b/23
Magrathea	0376 24402	V23v
Manor	0980 863031	V21/22/22b/23
Marctel	081-346 7150	V21/23/23v
Matrix	051-255 0225	V21/22/22b/23
Mbbs Leconfield	0964 550745	V21/22/22b/23
Mbbs Mitcham lic	081-648 0018	V21/23
Medway	0634 280031	V21/22/22b
Mektronic Cnsltnts	061-773 7739	V21/22/22b/23
Mercianet	0203 611943	V23v
Merkinstead	061-434 7059	V21/22/22b/23
Merlin	0443 834179	V21/22/22b/23
Mgbbs	0443 733343	V21/23S
Micro Live Bb	081-567 6500	V21
Micro Update	081-877 1529	V21/22/22b/23
Microdeal	0726 65422	V21/22/22b/23
Microlog	0422 71921	V21/22/22b/23
Microview!	081-509 0729	V23v
Midget Gem	0748 834836	V21/23
Midnight Caller	0633 279243	V21/22/22b/23
Mind Boggles	0362 762868	V21/22/22b/23
Mininet 3	0642 672813	V21/22/22b/23
Miracom Support	0473 232540	Hst
Mirage	061-652 1242	V21/22/22b/23
Mirror Ii	0628 810889	V21/22/22b/23
Mirrorworld/quest 1	0883 844044	V23
Mission Impossible	0602 654329	Hst
Mk Board	0908 311005	V21/22/22b/23
Mkbbs	0908 504556	V22/22b
Monkey Tree	0952 677002	V21/22/23
Monusci	0293 545665	V21/22/22b/23
Motor Exchange	0484 435314	V21/22/22b
Multi-bbs	041-649 9043	V21/22/22b/23
Murdoch'S Hangout	021-711 2620	V22/22b
Murky Caverns	081-426 9386	Hst
Mwcfe	0926 421844	V22bis
My Little Phoney	0865 773277	V21/22/23
Nicc Mid-west	0341 250377	V21/22/23
Nite Life	071-976 6807	V21/22/22b
No Escort Required	081-200 3817	Hst
No.1 Bbs	081-958 1689	V21/22/22b
Norpac	0434 608324	V21/22/22b
North Wales Bb	0978 88372	V21/22/22b
North Yorks Qbbs	0423 868065	V22/22b?
Northern Lights	0768 773685	V22/22b
Norwich Onion Bbs	0603 423305	V21/22/22b/23
Nova	0455 553371	V21/22/22b
Nova-net	0274 370760	V22
Odd-ball	081-679 2583	V21/22/22b/23
Open Access	081-427 3974	
Optix	0482 872294	V21/22/22b/23
Organic Garden	081-464 3305	V21/22/22b/23
Out Of The Blue	081-668 7667	V21/22/23
Owl Service	0532 605876	V21/23
P'S & Q'S Tel	051-236 3105	V21/22/22b/23
Pacific Lightning	0732 845338	V22/22b
Packet Bbs	081-547 1479	V21/22/2
Packet Place	0484 435620	V21/22/22b
Palm Beach	0303 265979	V21/22/22b/23
Pazaz Viewdata	0383 620259	V23v
PC Access	071-608 0081	V21/22/22b/23
PC Forum	0322 335348	V21/22/22b/23
PC Serve Shop	081-864 2633	V21/22/22b/23
PC Serve Softnet	0895 420164	V21/22/22b/23
PC Serve Storehouse		
	0494 728094	V21/22/22b/23
Pc-vax Opus	081-800-3549	V21/22/22b/23
Pcamiga Bbs	0602 735119	V22/22b
Peacenet West	0895 448998	V23v
Pecan Software Bbs	0272 248076	V21/22/22b
Penguin	0943 830820	V21/22/22b/23
Phantom	0226 340425	V21v/22v/23
Phoenix	0249 817704	Hst
Piston Popper	0424 853361	
Plug-ole	021-472 0256	V21/22/22b/23
Plus And Minus	0559 322766	V21/22/22b/23
Poacher	0476 62450	V21/22/22b/23
Polynet Bb	071-580 1690	V21/22/22b/23
Port Of Call	081-391 5779	V21/22/22b/23
Power Play Qbbs	0698 423669	V21/22/22b/23
Power Tower	0533 880114	V21/22/22b/23
Prestonet	0772 612462	V23v
Project Bbs	0384 401770	V21/22/22b/23
Prometheus	081-300 7177	V23v
Proximity	0793 480028	V21/22/22b/23
Publishing Shop	091-261 5228	V21/22/22b/23
Purely Pc	0232 645942	V21/22/22b
Pyramid	071-239 0871	V21/22/22b
Pyroto Mountain	0895 59071	V21/22/22b
Really Interesting	0582 414991	
Reflex Bbs	0703 685527	V21/22/22b/23
Regency Bbs	0542 33050	V21/22/23
Remote!pcw	0555 851887	V21/22/22b/23
Rivendell	0602 640488	V21/22/22b/23
Rm Tech. Support	0865 796431	V21/22/22b/23
Road Runner	061-483 4105	V21/22/22b/23
Roamer I	0292 45345	Hst
Royalink Uk	0962 66807	V21/22/22b
SAC Bbs	0242 260685	V21/22/23/22b
Sas Bbs	0742 325232	V21/22/22b/23
Satellite Southwest	0392 53116	V21/22/22b/23
Saturn Bb	0282 23570	
Scabs	0909 479080	V22bis
Scary Monster	0734 320297	Hst
Scot Air	0505 36036	V21/22/22b/23
Scothelp-st	031-313 2734	V21/22/22b/23
Scottish Opus	041-880 7863	V21/22/22b/23
Scottish Wildcat	0674 671141	V21/22/22b/23
Scs One	0444 236002	V22b
Sector	0772 454328	V23v
Semaj Qbbs	0303 862415	V22/22b
Sentinel Bb	0628 781429	V21/22/22b/23
Shades	0342 810905	V23
Shadowfax	0252 528146	V21/22/23
Shadowland	081-897 0488	V21/23
Shareware Library	0424 83654	V22/22b
Shasby'S Lair	0772 561066	Hst
Sherwood Forest	0602 397113	V21/22/22b/23
Short Circuit	0273 462967	Hst
Sid (acorn Service)	0223 243642	V23v
Signal Box	081-337 6583	V21/22/22b/23
Sin Bin	0532 661536	V23
Sirius	081-542 3772	V21/22/22b/23
Sirius Ii	0494 778425	V21/22/22b
Skull's Tower	081-943 1194	V21/22/22b/23
Sky-line	0603 742273	V21/23/23v
Skyline 1	0234 741691	Hst
Softmatic Bbs	0733 322540	V21/22/22
Software Source	0892 661149	V22/22b
Sounds Of Mercia	0203 682896	V21/22/22b
Sparx	0793 480287	V21/22/22b/23
Split Infinity	0342 712248	V23v
Pook Bbs	0268 767365	V21/22/22b/23
Sputnik Spitfire	0501 31754	V21/22/22b
St London Bbs	081-443 2432	V21/23
Stabb	0793 855176	V21/22/23/22b
Staines Bb	0784 465794	V21/22/22b/23
Starbase One	071-733 3992	V21/22/22b/23
Strange Brew!	081-665 5038	V22/22b
Stun User Network	061-429 9803	V21/22/22b/23
Summer Wine	0484 653234	Hst
Sunburn Inc.	021-449 5269	V21/23
Super Ops Bbs	0782 284081	V21/22/22b
Swindon Newc Bb	0793 616683	V21/23
System-c-v	0403 50607	Hst
T.a.b.b.s.	0533 517615	V21/22/23
Tabbs	0225 743797	V21/22/22b/23
Taecomm	0994 6709	V21/23
Taff'S Retreat	0834 4562	V21/22/22b/23
Tardis	0772 27236	V21
Tasque	0355 222664	Hst
Tasug Opus	0904 760129	V21/22/22b/23
Tavern	081-445 6514	V21/22/22b/23
Tbbs-rovoreed	081-542 9767	V21/22/22b/23
Tequila Sunset	0703 867786	V23v
Terminal Net 5	0402 456135	V21/22/22b/23
Terminal-net	081-423 5262	V21/22/22b/23
Tharr Bbs	0234 261804	V22/22b
Third Wave	071-585 3163	V21/23
Three Kings	0354 56267	V21/22/22b
Track 83	0953 851351	V21/22/22b/23
Trans-atlantic Res.	0375 25375	V21/22/22b/23
Transylvania	0274 621668	
Tranz-com Bbs	081-952 6273	V21/23
Trinity I	0392 410210	V21/22/22b/23
Trinity Ii	0367 22764	V21/22/22b/23
Tug Ii	0905 775191	V21/22/22b/23
Twilight Zone	081-788 0884	V21/22/22b/23
Twilight Zone Ii	071-608 1485	Hst
Typesetter's Wkshp	0274 491606	V21/22/23
Uk Healthlink	0942 722984	V21/22/22b/23
Unisys Etoi Bbs	081-453 5739	V21/22/22b/23
Unit One	0285 713688	V21/22/22b
V.i.t.a.s.	021-749 5860	V21/23
Valente'S Bbs	071-978 2078	Hst
Vector System	0329 45824	Hst
Viking East Anglia	0255 503048 Rb	V23v
Village	081-464 2516	V21/22/22b/23
Village Fayre	081-841 5971 Rb	V23
Voyager Bbs	061-725 9580	V21/22/22b/23
White Lightning	0635 37259	V22/22b
Whitehall Pent	071-930 3903	V21/22/22b/23
Wild Imaginings	091-263 4303	V21/22/22b/23
Winchester Remote	0962 69322	V21/22/22b/23
Wolverhampton Ros	0902 745337	V21/22/22b/23
Womble Base	081-979 9606 Rb	V23
Woodgreen Bbs	081-889 5624	V21/23
Yugo Bbs	0734 753648	V21/22/22b/23
Zeus Bbs	0487 710487	V21/22

EXPRESS EXTRA

This is the second of our regular monthly round-ups of second-hand prices, compiled from Shopping *Express* and already some interesting trends are becoming apparent. Read on for those bargains . . .

While Shopping *Express* is undoubtedly the perfect way to track down the best bargains in the computer world, many people are still, perhaps understandably, wary of buying products through mail order or through personal ads. This is mainly because you usually cannot see the item you are buying before you hand over your money.

We do everything in our power to make sure that all the advertisements we run are above board. But here are a few tips designed to take the risk out of buying through the post or over the phone:

- Be precise in describing what you want to buy. Leave no room for error. Feel free to go overboard in double-checking details – make, model, specifications, colour, size, the page number and name of the magazine in which you saw the advertisement etc.
- Confirm the price you are supposed to be paying. If you are phoning a company check whether there are any hidden extras, such as postage and packaging.
- Check how the item will be delivered to you and how long it will take. This is especially important with the reader ads where delivery details are rarely mentioned.
- If you are writing off for the product keep copies of all correspondence. If you are phoning note down details of when you phoned and who you spoke to.
- If possible, enquire about guarantees and servicing. Check the supplier's policy on returns and refunds. With reader ads, it is probably best to make the effort to see the item before you hand over any money.
- It is best to pay by credit card, especially for items over £100, as this provides extra cover under the credit card companies' own insurance schemes. Otherwise use a crossed cheque or postal order. Avoid sending cash at all costs.

SECOND HAND PRICE ROUND-UP

As usual, just a few points to bear in mind:

- The lower priced products are usually accompanied by the words in the ad: "Some repair work necessary."
- The higher priced computers are invariably as part of a package including numerous add-ons – anything from printers to laser guns – and mountains of software.
- Remember that this is only a guide, so if you find a PC for £20 down your local market, bully for you.

	Range	Average	Movement
SPECTRUM	£30-90	£60	↓
SPECTRUM +2	£50-250	£135	↓
SPECTRUM +3	£120-300	£180	↓
QL	£50-79	£67	↓↓
CPC464	£65-350	£200	↑
PCW8256	£70-275	£200	↓↓
8512	£250-450	£350	↑
6128	£200-400	£250	NEW
520STFM	£80-390	£270	↓↓
1040	£190-375	£290	↓↓
520ST	£280-300	£290	↑
STE	£270-399	£310	NEW
LYNX	£130-200	£160	NEW
800XL	£40-120	£90	↓
A500	£200-590	£385	↓↓
PC ENGINE	£95-330	£200	↑
SEGA	£30-100	£80	↓
SEGA MEGADRIVE	£180-360	£265	↑↑
SAM COUPE	£100-270	£150	NEW
LC10 PRINTER	£100-175	£120	NEW

KEY: ↓ = down, ↓↓ = down by over £50, ↑ = up, ↑↑ = up by over £50, NEW = now selling in significant amounts.

● BARGAINS OF THE MONTH

For the kids, Spectrums can be picked up a good price, while an Amstrad PCW 8256 at around £200 should be appealing to would be writers.

Biggest mover was the Sega, down a massive £120 on average and now on a more realistic level than last month. The most over priced machines are the Sega MegaDrive – none of which could be picked up for less than you would pay for it in the shops – and the Amiga 500. Both are usually advertised with bundles of games which tends to push their prices up rather disproportionately. Still the easiest second-hand machines to lay your hands on are the Atari 520STFM and the Amiga 500, while surprisingly the old 520 ST is advertised very little.

SOUTH EAST

Abtek (0722 413337)
8 December – New College, Helstone Road, Swindon.

CEAC (071 738 2400)
1 December – Canterbury College, New Dover Road, Canterbury, Kent.Viewing and testing 9am-10.30am, sale starts 10.30am
7 December – CEAC offices, 8 Grant Road, Clapham Junction, SW11. Viewing 12 noon-8pm on 6 December and 12 noon-5pM on the day, sale starts 6pm.
15 December – CEAC offices, 8 Grant Road, Clapham Junction, SW11. Viewing 9.30am-10.30am, sale starts 11.30am.
21 December – CEAC offices, 8 Grant Road, Clapham Junction, SW11. Viewing 12 noon-8pm 20 December and 12 noon-5pm on the day, sale starts 6pm.

London Computer Auction Rooms (071-794 1116)
8 December – Barnet College, Russell Lane. Viewing from 8.30am, sale starts 11am.

MCD (0276 692260)
8 December – St Paul's School, Green Street, Sunbury-On-Thames. Viewing and testing 5pm-8pm on Friday 7 and from 9am on the day, sale atarts 10.30am.

Technology Computer Services (081-651 3639)
8 December – Kemnal Manor School, Sevenoaks Way, Orpington, Kent. Viewing 9am, sale starts 10.30am
15 December – Kemnal Manor School, Sevenoaks Way, Orpington, Kent. Viewing 9am, sale starts 10.30am

SOUTH WEST

Traderdesk (0527 579120)
8 December – BAWA Leisure Centre, 589 Southmeade Road, Filton, Bristol. Please phone for further details.

MANCHESTER

Computer Connections (0254 813316)
15 December – Bowlers Leisure Complex, Trafford Park, Manchester. ■

DECEMBER AUCTION ROUND-UP

BIDDING TIPS:

- Prices at auctions can be quite a lot lower than in shops, but you will have to pay in full on the day.
- Get a catalogue before hand.
- Set yourself a limit.
- Give your selected items a good looking over and check if there is any warranty. If there isn't you still have the rights of a second-hand buyer – under the Sale of Goods Act you are entitled to a refund if the item is faulty or does not match up to the description given.
- Wait for the auctioneer to call the first bid – he'll come right down if no-one offers.
- Don't be tempted to outbid over the odds – you might come up against a dealer for whom a bargain is just a higher than normal margin.

WHAT'S ON AND WHERE

If you run auctions anywhere, or know of any coming up in your area, please contact us with details so that we can make this listing as comprehensive as possible.

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THE PD COLUMN

There's a wealth of free software out there which is yours for the price of a disk. Adam Waring, takes a look at what wonderful freebies are on offer this week in the weird and wonderful world of Public Domain...

The Run • ST (double sided, 1meg) • The Other PD Library
Remember that amazing car demo on the Amiga? Probably not if you've got an ST and not an Amiga. Well now ST owners can enjoy this amazing demo courtesy of The Other PD Library.

The original Amiga version broke away from the usual mould of wibbly-wobbly scrolling messages. Instead it featured a high speed car chase though oncoming traffic.

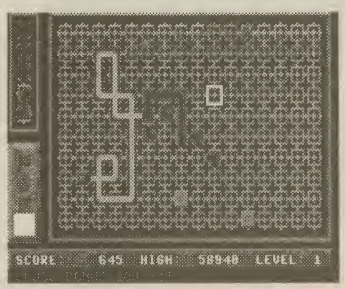
A cop car in hot pursuit of a renegade vehicle weaves its way through the traffic with pin-point accuracy. The game is a rolling demo with a limited number of frames creating a sequence which is then repeated.

The demo was penned by the famous PD programmer Tobias Richer. As you'd expect from such an accomplished writer the ST version is just as breath-taking as the Amiga version. So take a seat, strap yourself in, and prepare to be stunned.

Games Disk 22 • Amiga • Capricorn Computers • Disk 451
Public Domain games are improving all the time. No longer are they the 'poor man's' version of the leisure side of computing. Some are virtually indistinguishable from their commercial counterparts.

Take *Pipeline* for example. This game is heavily based on the popular arcade game *Pipe Mania*. Your aim is to build a pipeline to contain the flow of some sticky, gooey substance.

To do this you use a variety of pipe segments including horizontal and vertical straights, bends and cross pieces. You plonk them down with the aim of forming one continuous length of piping. The snag is that you have no control over which pieces you are given. You have to work with what you get.



• Pipeline: ***stop the gunge from spreading with various pasta shapes.***

More often than not there's a gap left in the pipe you're building but you just cannot find the right shape with which to fill it. Meanwhile the fluid continues to flow relentlessly, and you have to get rid of the pieces that don't fit by putting them down elsewhere, then wait for one that does.

A window showing the next few pipes appears on the left of the screen. The trick is to position these in places where they'll come in useful later on.

The graphics are more than adequate and the music is good too. All in all it's an extremely polished piece of public domain software.

Pipeline is a very addictive game. I'll confess that I haven't actually progressed any further than the first level yet, but I'll keep on trying...

Three other games come on the same disk. *Jeopard* has had a mention before in these pages, but for those who missed it here's a short description.

Basically, *Jeopard* is a computerised version of the famous board game *Risk*. Players take charge of armies, each with the aim of conquering the world.

The main advantage the computer version has over the board game is that there's none of that messing around with playing cards and fiddly bits of plastic.

Also on the disk is a version of another famous game, *Mastermind*. In it the computer sets the code which the player has to crack using logic and deduction before they run out of a limited number of turns

The game runs from the workbench and can be clicked on and off with ease. This makes it useful to have on your own

ATARI ST ★ ATARI ST ★ ATARI ST ★ ATARI ST ★ ATARI

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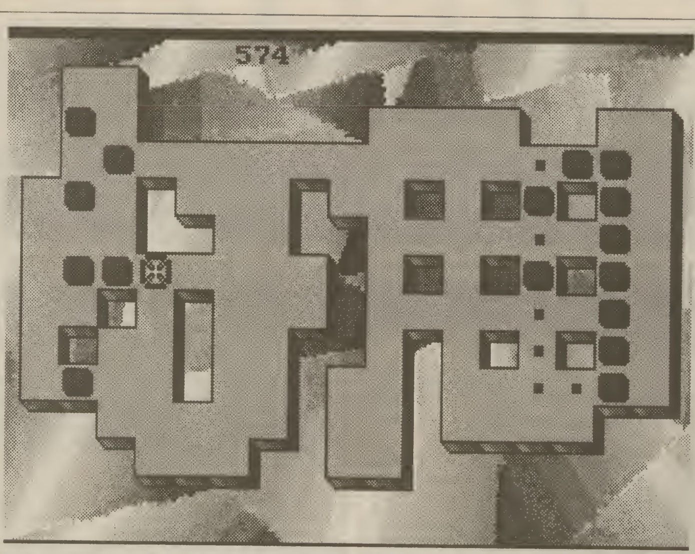

• **Sokosky:** *deceptively simple logic game, easy to learn and impossible to master*

utilities disk, so you can kill a few seconds between more serious work.

The final game, *Sokosky*, is a logic game which takes plenty of brain power to master. Basically you have to push tiles onto dots. This may sound easy but believe me, it's not.

What is easy, though, is getting the tiles trapped. Push one against the other and it becomes jammed. The same thing happens if you push one against a wall. What starts off looking very simple indeed is, in fact, extremely difficult and frustrating. Just when you're sure that you've solved the blasted thing, you realise there's absolutely no way you're ever going to be able to get that last stupid one to fit. Grrrl

Sokosky looks very simple and basic on first viewing. Appearances can be deceptive, however, and of all the games on the disk, I spent the most time playing this one.

PD LIBRARY FOR SAM

Owners of the Sam Coupé must be fed up that they can only run Spectrum games on their technically superior computers. All this has changed, though, because now there is dedicated – and, more importantly, free – software available for them. Turbo PD is a library which specialises in public domain programs for the late MGT's baby.

The library boasts seven disks so far but I understand that many more are being added all the time. The library is doing very well considering it is supporting such a minority machine. Games, demos and utilities can all be found on the disks.

I was sent a copy of one of the games, called *Samtris*. Unfortunately, the office coupé is lying in bits on Technical Editor Keith Pomfret's desk at the moment but I'll take a look at *Samtris* as soon as the machine is re-assembled. I'm sure you will be able to guess what kind of game it is, though.

All Turbo's disks cost just £2. Cheques should be made payable to A Betts, who can be contacted at Turbo PD Library, 8 Healy, Lakeside, Tamworth, Staffs B77 2RF.

COMING SOON...

Christmas is coming, *Express* is getting fat. And for the festive season your favourite computer weekly is planning a bumper Christmas issue.

Amongst the yuletide treats there'll be a 'Best of 1990' PD feature in which we'll be compiling a list of the top ten PD packages for all major machines over the last year.

Regular readers of this column will realise that it hasn't yet been running a whole year. It's just possible that I may have missed out one or two of the best PD programs around.

So if your library has an amazing PD program that hasn't been mentioned in the Column, then I'd very much like to see it.

Whatever machine you cater for, I need to see the best you've got, whether they're games, utilities, serious or just plain unusual.

Send your stuff to: Santa's PD Column, *NCE*, Future Publishing, 30 Monmouth Street, Bath BA1 2BW. ■

WHERE TO GO

Capricorn Computers, 35 Warick Road, Olton, Solihull, West Midlands B92 7HS. Telephone 021-707 0381. Ram some Amiga PD into your Amiga's disk drive. Prices are £2.50, or £1.50 if you include a blank disk with your order.

The Other PD Library, 108 Kenmare Road, Wavertree, Liverpool L15 3HQ. Telephone 051-734 4465. If you've looked all over the place and can't kind what you need, why not try The Other PD Library? Prices start at £2.50.

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206: 5 major demos inc: The Revenge of Babbnassen, Cebit90 by Red Sector
209: Scoopex: Mental Hangover
223: DeathStar Mega Demo (2 Disks)
226: Freddy Krugar Rap.
228: Robocop demo.
229: RAF Megademo: (2 disks): Some great animation on this one
230: Red Sector Megademo: (2 disks): Simply one of the best around.
232: Safe Sex Demo: Absolutely hillarious and it isn't even X-Rated.
239: Goldfire Megademo: New first demo from Goldfire. Excellent.
247: Crionics Neverwhere. (1 MEG). A disk that deserves to be called MEGA
248: Crionics Megademo. 3 Parts all great. The Madonna Animation especially.
249: Cave Compact. (1 MEG). A compilation of really good demos.
250: Brainstorm Megademo. (2 DISKS).
251: Giants Megademo. (2 disks).
253: Rebels Megademo. Hot stuff from beginning to end.

ALL DISKS 99p each

GRAPHICS PICCYS AND ANIMATION
308: Nightbreed Slideshow by H.C.C.: These are the best pics I've seen yet.
315: Miller Lite Advert.
319: Neighbours Slideshow. Full of hillarious captions.
407: Walker 1 Animation (1 Meg). Been around for a while. A Classic.
408: Walker 2 Animation (1 Meg). Yepl You got it another Classic.
412: The Education of Cool Cougar (1 Meg): Brilliant
420: Fractal Flight. (1 Meg): Demo of Fractal Flight by Hypercube. Wow!!
425: Raiders of the Lost Arc. (1 Meg). Best sequence from the film.
430: Dragons Lair 2. Time Warp Demo: (512K). Great demo of the new game.

GENERAL
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506: Dope Intro writer.
507: Virus Killer disk.
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511: North C: Complete programming language by Steve Hawtin
512: Complete C Manual: (2 Disks): 200 Page manual with 70 example progs.
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GAMES
702: Star Trek 3: (2 Disks): absolutely fantastic.....
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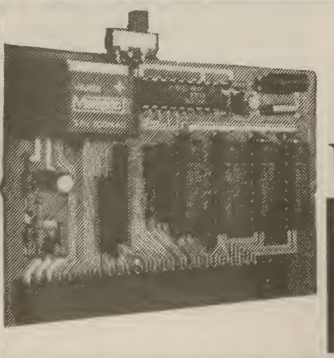

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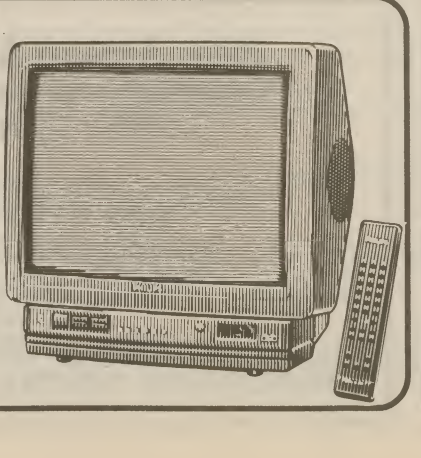

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TECH TIPS

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Keith Pomfret's Tech Tips and we'll soon see you right. Send your sorry stories to Tech Tips, Beauford Place, 30 Monmouth Street, Bath BA1 2BW.

■ HELP! Atari drive extra

I have just acquired a pair of elderly 5.25-inch floppy disk drives and I need some information to enable me to use them with my 520STFM.

The drives are Mirropolis model 1115-1V. They are large, old fashioned looking (single side?) American beasties. The power supply connections (+12, +5, 0V) are self explanatory, but what I need is the pin out for the PCB edge connector. It has 17 underside connections which are all common (ground?) numbered odd (1-33) and top contacts (2-34) even numbers. I need to know which contact number to wire to each of the 14 pins of the Atari connecting plug.

I would be most grateful for any information you can give me about these drives. Also do you know of a supplier of Atari type 14-pin plugs or leads.

Brian Sherry, Laindon.

The 5.25-inch drives you possess aren't in any of our catalogues although the connectors seem to be normal. Get a competent computer repairer to check the pin outs for you and check the capacity. Even if they're a strange capacity it may be possible to use a software patch to run them, but with extra ST drives only costing £45.50 (if you look hard), it may be that the cost outweighs the benefits.

The plugs and leads that you are after can be obtained from RSD on 0992 584205.

■ HELP! Address printer

The only job that is truly computerised in our office is printing the sticky labels to go on envelopes. We address 600 envelopes a day and at the weekend, the same sticky label program is used for our weekly stock update.

The problem isn't so much the weekend when there is only one person using the printer, but during the week when our printer has to be taken off line and be adjusted for the labels. During the time that the labels are being printed, no one can have access to the printer for letters, reports and such like.

It wasn't too bad initially. We are a well organised company and we allocated time slots to every use of the hardware. As business increases, the leeway between those time slots is gobbled up and we currently have to allocate ten hours of overtime per week in order to get the labels set and printed.

We know that we must get another printer and we have an XT clone that isn't used and could be set up purely to drive a dedicated printer for labels. With space at a premium, I wonder if you can recommend a simple printer that could do the one job of labels.

Marion Ox, Crawley

I am loathed to recommend a printer specifically for one job. The situation that you have described is a small fast developing company. If your main printer goes pop and the only other alternative is the one that you use for labels, you will be wondering where the paddle is if your label printer can only print labels. My advice would be to invest in a good brand name printer that may be slightly over specified for the job, but would be a good emergency back up for the main one if that blew up or otherwise chose to take a day off.

If your needs were slightly different and you had redundancy already built in to your printing requirements, I would suggest a nippy little widget from Seikosha. The Seikosha Smart Label Printer is a teeny little software driven dedicated printer that takes up very little space, doesn't make a lot of racket and can do labels, bar codes, and all the other sticky jobs that a printer is usually needed for. It comes with its own software and will run on any IBM PX XT, AT, PS/2 or true compatible. We tried it on half a dozen machines around the office without any problems.

Seikosha is on 0753 685873.

■ HELP! Virus insight

Could you recommend a book on viruses that isn't too heavy on the brain, will give me an insight into the problem and can tell me what to do about them. I already have information on Solomon's virus service but want to try something different.

John Stott, Redcar Cleveland

What's wrong with Dr Solomon? We've always found him to be more than adequate, easily comprehensible and very approachable. If you honestly don't want the country's leading virus-fettler's advice I suppose you have your reasons.

The current book catalogue lists several virus specific books, but the one that comes closest to your needs is *The Computer Virus Handbook* by RB Levin. It is published by Osborne McGraw-Hill and has the number ISBN 0-07-881647-5. It's an American import with a cover price of $24.95, but as with all US books, shop around for a good price. WH Smith says that it can get it easily enough but we couldn't find anyone local with it on the shelves so be prepared to wait the statutory 14 or so days after it's ordered.

■ HELP! Piracy again

I have bought an Amiga second-hand and it came with some useful utilities. Amongst these was a program called *X-Copy* which I used to back up all my friends' games. I got a virus on a disk and it has trashed most of my games disks and made them unplayable.

Unfortunately, *X-Copy* was trashed too so I can't start again. I only have about 30 games left. What should I do?

Adrian Kelly, No Address supplied (cowardly ploy)

You should get a good solicitor. If you copy games you are breaking the law. If you had bothered to put an address on the letter we would have been able to send Bob Hay and the team from FAST (Federation Against Software Theft) along to lend a helping hand with the cataloguing of your remaining illegal disks.

The only thing that you can do now is get a good Virus killer (*Virus X* or suchlike) from a PD library and go through your disks checking them for nasties. The games with their copy protected loaders will have to be trashed because the virus killer will mistake their non-standard bootblocks for viruses and render them unusable. Still that's not a great price to pay as you didn't pay anything in the first place!

■ HELP! driver diversity

I have two printer orientated questions I wish to ask.

Firstly, I have recently bought a Citizen Swift 24 colour printer for connection to an Amiga 500. After getting familiar with the highly complex menu system which this printer employs, I now have to contend with software difficulties.

I am having particular problems with my trusted word processor, ProWrite version 2.0. I can get my Citizen to print both NQL and draft covering all 80 columns, but when I want something printed in the standard print mode, used for coloured graphics with text, the printer then starts printing the output half way across the page. When the print head reaches the furthest right hand position it makes a very disturbing growling noise then jumps to the middle of the next line.

I have tried everything to stop it - altering the built in menu, printer drivers, preference settings, even repositioning the paper, but all have failed to solve my problem. I am desperate.

My second printer problem concerns a Watanabe X-Y Plotter model MP1000. It's a serial printer with a standard RS232C interface. My problem is I know of no printer drivers, no software or anything enabling me to use this plotter.

In desperation I wrote a short program on Amiga basic telling the plotter to print the letter 'A'. After running it all I got was a load of numbers and letters, none of which made any sense. I hope you can help me with both these problems.

Noel Hardwick, Halesowen.

You've hit the nail on the head when you say that the problem is one of printer drivers. The Amiga is well specified in that department with dozens of PD libraries clambering over each other for the honour of filling your needs.

You could choose any that are advertising in the computer press, but here's one to start with: Amiganuts, 169, Dale Valley Road,Southampton.

■ HELP! Amstrad extra

I have recently bought a second drive for my Amstrad PPC640S and after fitting it in accordance with the instructions and powering up the computer both drives were recognised by the computer, but a message "put system disk in drive A" appeared. No matter what I did this message still came up. If I put a disk in each drive then the computer tried to access drive A ten times before the message appeared.

After fitting the new drive in place of the original drive and not connecting the second drive the computer worked OK recognising the system disk.

Have you any suggestions, please?

Arthur Wilkes, Durham City.

Sounds like you've got a dose of "Whoops, I ssem to have forgot to send the drive select jumpers properly" syndrome. Most drives have jumpers that can be set in four positions (0,1,2,3) Drive A is 0, Drive B is 1 and so on. Make sure that you've got this sorted. If it still doesn't work, there could be jumpers or DIP switches on the controller or board that need setting. Check your manuals foer the correct setting. finally, make sure that your connectors are clean and that you are trying to connect the correct things together. (Manuals again!) There, it works now, doesn't it.

■ HELP! PCW rainbow

VGA monitors get talked about in all of the PC magazines and the pictures of them are better than the PCW display. How do I add a VGA monitor to my PCW? The local computer shop was unhelpful, telling me to upgrade to a 9512 for a a paper white monitor.

Paper white isn't good enough. I want to see what my PCW programs look like in colour. How can I put a colour VGA monitor on my 8512.

Alma Dearwick, Urmston

You don't. The PCW is incapable of displaying colour and has no way to address the analogue input of a VGA monitor. Your dealer may have sounded disheartening, but was being realistic. The PCW programs that you are using don't have any colour so even if you could weld the desirable VGA monitor to it, you'd not get colour.

■ HELP! Green Berries

I have a PC type computer that my wife uses for letters, the kids use for games and I pick up the bills for. Is there any way that I can use it to record the precipitation of noxious materials on flowers, leaves and berries as part of a survey that I'm doing on the adverse effects of chemical and nuclear polution? I need to be able to type in a single word i.e. plutonium and get all the references on the subject.

Granville Cooch, Sidmouth Devon.

Any database should do the job for you. check up with your local computer shop to see which one they know best and if it's within your budget, buy it. Databases can be a fiddly thing to learn so it's important that you choose one that your shop can train and support you on..

■ TIP! Merger

There seem to be two schools of thought that like different sorts of help. There's the traditional ones (like me) who own a BBC and used to hang on to KG's every word There are the young pretenders (like yourself) who ridicule everything sensible and don't ever use proper computer printed diagrams.

I know that your readers like the lightweight approach to technical help, but . . .

Miles Drewry, Whitehaven, Cumbria.

I had to use the editorial knife on that letter as it went on for 2,500 words. I feel sorry for the freelance typist who had to struggle to type it in only to see it ripped to bits. To condense Mr Drewry's letter into a couple of sentences:

1) He didn't like the mouse doubler done for Circuit City by Pat Mac in my absence.

2) He had an alternative that he wanted me to print. (I won't because like most of his letter it was unadulterated effluent.)

So, Mr Drewry, pin yer eyelids back and take a look at a real solution. Several readers commented that there may be a more elegant way of doing it, but Pat did have to organise it in a hurry when I scooted of to the Sov-bloc for a spell in the Lubianka.

The best solution to the mouse doubling scenario is in Circuit City this week.

■ HELP! On line on-line

Most of my reports are typed on the train going to or from meetings. The disk from my Tosh is given to a secretary and after spell checking etc, the report is output through a Laserjet. From time to time, I'm away from the office for a couple of weeks and the only way to get the work done without any outside help is to post or courier the disk back to HQ.

There must be a more satisfactory way to do this and I'm wondering if I can connect a portable phone to my tosh and send the data back to the office that way.

Allan Maudslay, Coventry

It's possible, but it isn't quite as simple as you think. We've tried several ways of getting data to and from remote locations and it can be difficult.

The first attempt was using an acoustic coupler and a portable modem. This allowed us to log on to an on-line service, but the acoustic connection allowed a lot of corruption to get on the line. It worked from the top of a big hill at a quiet time of day, but on the train and a National Express coach, it wasn't so clever. From the passenger seat of a car on the M25 we had slightly better results but in order to guarantee error free communication, stronger medicine was called for.

A telephone call to RACAL, the nice vodaphone folks, confirmed that they do a dedicated cellphone modem that will connect to certain portable phones and uses a system akin to packet radio with stringent checksumming to ensure data integrity. What this means is that the data is collected into 'packets', an algorithm checks its content and is attached to the packet. This is squirted along the cell phone radio signal and 'caught' by a receiver that 'opens' the packet of data, checks what's in it against the checksum and if all's well, places it in a received file. If there's a problem, it sends a signal back to the transmitting modem and asks for the packet again. This carries on until the packet is received without error.

Using this system, your document should get there without corruption. RACAL is on 0635 503236.

That however is only half of the story. Once you've got your mobile system up and working, you'll have to have a method of receiving data. The simplest way would be to have a modem attached to a spare PC in the office and have the PC running host software. This would work like a private BBS with you pinning your messages on to the board and your secretarial staff taking them off.

Watch *Express* for a hands on review of the RACAL portable cell phone modem.

■ HELP! Eraserhead

Computers isn't my subject. The PC that I bought for reports and letters has worked well but I get an error message now when I try to save letters. The data disk must have become corrupted. It has worked OK for just a year and now that there isn't a warranty it has chosen to be full. When I type dir (in Portext) I get a list of files and I have no trouble loading or printing any of them. When I try to save I get a disk full error. How can I fix the data disk?

John Willey, Plypton, Devon

It sounds as if your data disk is full. If this is the case, follow the instructions that you used to make your original data disk and you'll have a shiny new empty disk ready for the next years work.

■ Help! Power

How can I get my computer to work away from the office. The budget won't stretch to a lap top or other portable so I'm stuck with a 286 AT clone. I have seen TVs coffee makers and even videos, microwaves and fridges (on buses) running from vehicle electrics. Is it possible to make a PC work in the back of my Espace without towing a huge generator around. I don't think that that would work anyway because of the mucky electric from a jenny.

Andrew Fenton, Nantwich, Cheshire.

Yup, you can now plug into what you get into. The implement that will do your bidding is an inverter. This does the necessary by taking car power (12v dc) and turning it into ac before transforming it by a factor of 20:1 to the dangerous mains stuff. It would be crazy to attempt to build one from scratch so we asked Mr Maplin to send us the bits and some instructions on how to weld them together.

The how to turn Tech Tip's Roller into a power station project starts in Circuit City this week. ■

■ HELP! Jerusalem Joystick

Is there a simple joystick solution to run games on a PC? I use an XT from IBM and it is very difficult to operate the directional parts of games from the numeric keypad on the right of the keyboard. I don't want to mess about with cards and things as I had a major problem fitting a soundcard that ended up with my dealer charging £47 plus VAT to sort it out.

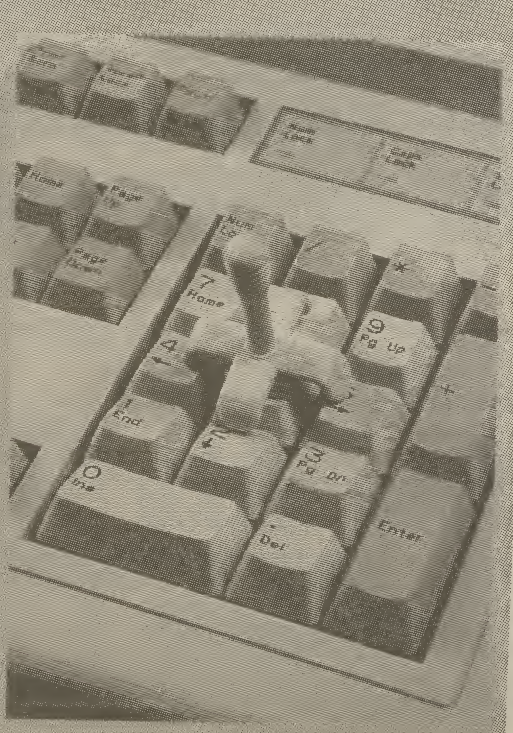
Charles Kunz, Dorchester, Dorset.

Up until a day or so ago I would have wibbled on about how easy it is to fit a games port to a PC etc, but as you're obviously not happy with any idea that involves a screwdriver and the bonnet up, think yourself lucky that we're on the list for international whizzy products.

Dropping on the floor with a thud (or even thudlet) came the Keestick, the latest computer peripheral from the land of ripe oranges and friendly Kibbutzs.

Keestick is a simple device that sits on the numeric cluster and operates 2,4,6 and 6 depending on which way it's pushed. This gives you the sensitivity of a joystick while retaining the use of the cluster by lifting it off.

Keestick and more details of other such clever twidgets from Israel can be had from BIPAC, the Britain/Israel Public Affairs office on 071-490 5373.



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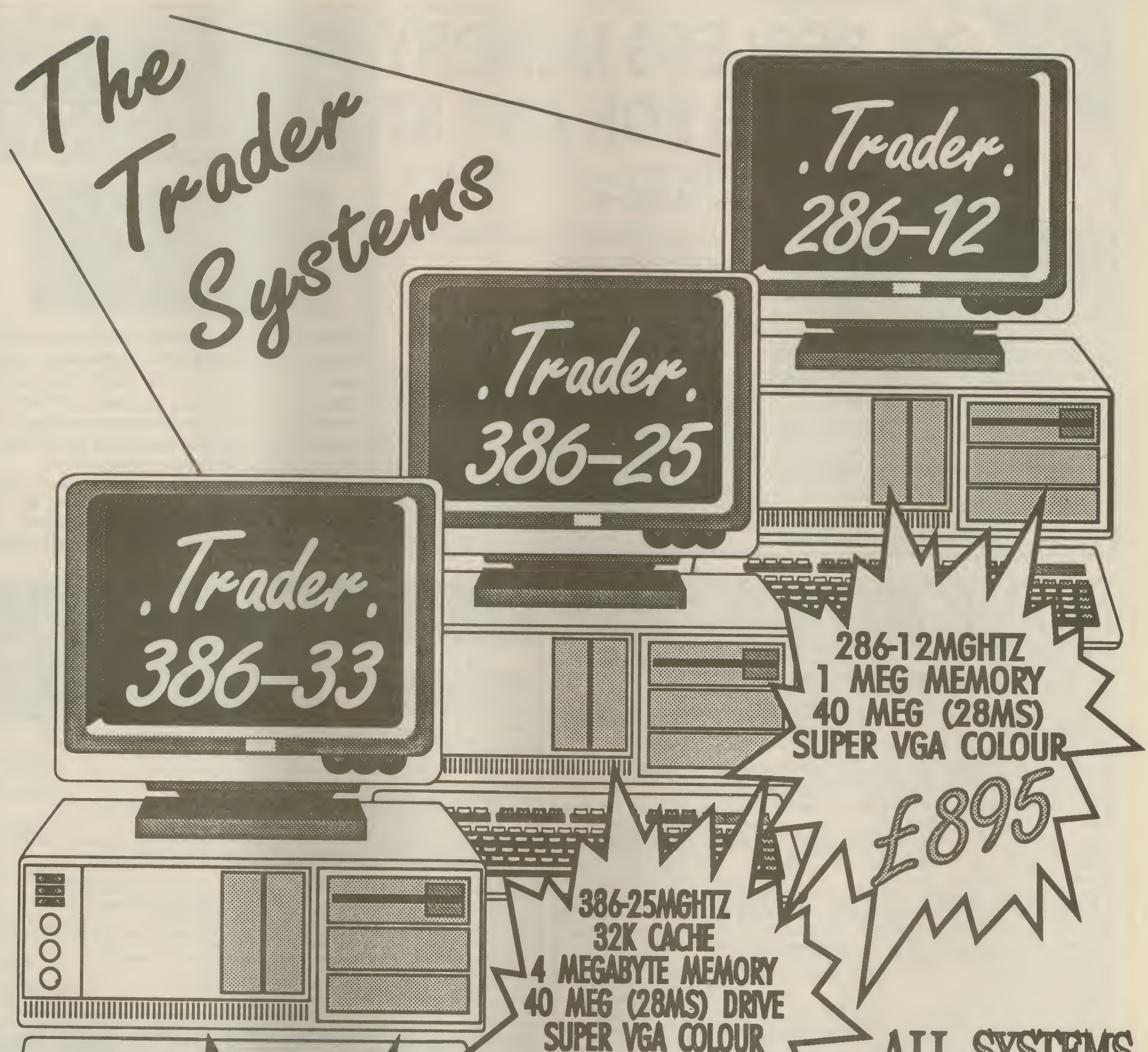

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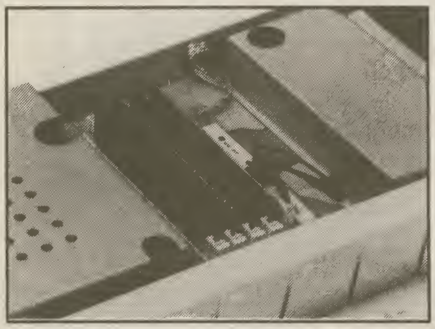

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The more observant among you may have noticed that we had a couple of technical hitches with the questionnaires we printed in the last couple of issues.

So here we are, The *Express* Questionnaire mark three. As an extra incentive, we're now offering a £100 cash prize for the best suggestion in Section Five for a really cool *Express* feature. For the runners up we are giving away five free subscriptions. But that's not all; the winners of the *Express* subscriptions also win a year's copies of the Future magazine of their choice – select from *Amiga Format, ST Format, PC Plus, Commodore Format, Your Sinclair, S* and *Amstrad Action.*

To have a chance of winning you'll need to get your questionnaire back to us by December 1. Send it in an envelope marked *'Express* Questionnaire' to *New Computer Express*, 30 Monmouth Street, Bath, Avon BA1 2BW.

If you have already sent in a questionnaire your entry will automatically be included in the £100 competition – please don't send in another form.

SECTION ONE: HARDWARE

What machine do you use the most at home?

Amiga 500 ☐
Other Amiga ☐
ST ☐
STE ☐
Desktop PC ☐
Laptop PC ☐
Archimedes ☐
CPC ☐
Spectrum ☐
C64 ☐
Console ☐
Macintosh ☐

Other (specify)..

What machine do you use the most at work/college?

Amiga 500 ☐
Other Amiga ☐
ST ☐
STE ☐
Desktop PC ☐
Laptop PC ☐
Archimedes ☐
CPC ☐
Spectrum ☐
C64 ☐
Macintosh ☐
Mini/mainframe ☐

Other (specify)..

What other machines do you have at home?

Amiga 500 ☐
Other Amiga ☐
ST ☐
STE ☐
Desktop PC ☐
Laptop PC ☐
Archimedes ☐
CPC ☐
Spectrum ☐
C64 ☐
Macintosh ☐
MSX ☐
BBC Micro ☐
PCW ☐
Atari 8-bit ☐
Console ☐

Other (specify)..

What other machines do you use at work/college?

Amiga 500 ☐
Other Amiga ☐
ST ☐
STE ☐
Desktop PC ☐
Laptop PC ☐
Archimedes ☐
CPC ☐
Spectrum ☐
C64 ☐
Macintosh ☐
Mini/mainframe ☐

Other (specify)..

How long have you owned your computer?

Less than three months ☐
Three months to a year ☐
One to three years ☐
Over 3 years ☐

What peripherals do you own?

Monitor ☐
Hard disk ☐
Extra floppy drive ☐
Modem ☐
Printer ☐
Memory expansion ☐
Scanner/digitiser ☐
Sampler/MIDI ☐
Multiface/Action Replay ☐
Joystick ☐

What peripherals do you intend to buy in the next year?

Monitor ☐
Hard disk ☐
Extra floppy drive ☐
Modem ☐
Printer ☐
Memory expansion ☐
Scanner/digitiser ☐
Sampler/MIDI ☐
Multiface/Action Replay ☐
Joystick ☐

How much did you spend on hardware last year/last two months?

	Two months	Year
Less than £50	☐	☐
£50-£150	☐	☐
£150-£300	☐	☐
Over £300	☐	☐

How often do you buy goods mail order?

Regularly ☐
Sometimes ☐
Never ☐

How many times have you bought through *Express* advertisements?

....

How do you buy your hardware? (tick all used in the last year)

Independent retailer ☐
High Street store (Dixons etc) ☐
Mail Order ☐
Auctions ☐
Classified advertisements ☐

How much do you expect to spend next year/next two months?

	Two months	Year
Less than £50	☐	☐
£50-£150	☐	☐
£150-£300	☐	☐
Over £300	☐	☐

Are you responsible for computer buying decisions at work?

Yes ☐
No ☐

Do you intend to buy a new computer in the next year? If so, what?

No computer ☐
Amiga 500 ☐
Other Amiga ☐
ST ☐
STE ☐
Desktop PC ☐
Laptop PC ☐
Archimedes ☐
CPC ☐
Spectrum ☐
C64 ☐
Macintosh ☐
Console ☐

Other (specify)..

In an ideal world, which of these computers would you most like to own?

- Amiga 500 ☐
- Other Amiga ☐
- ST ☐
  - STE ☐
  - Desktop PC ☐
  - Laptop PC ☐
  - Archimedes ☐
  - CPC ☐
  - Spectrum ☐
  - C64 ☐
  - Macintosh ☐
  - NeXT ☐

Other (specify)..

SECTION TWO: SOFTWARE

What do you use your computer for at home?

	Main use	Sometimes
Games	☐	☐
Word processing	☐	☐
Spreadsheet/accounts	☐	☐
DTP	☐	☐
Graphics	☐	☐
Music	☐	☐
Education	☐	☐
Programming	☐	☐
Comms	☐	☐

What do you mainly use your computer for at work/college?

	Main use	Sometimes
Games	☐	☐
Word processing	☐	☐
Spreadsheet/accounts	☐	☐
DTP	☐	☐
Graphics	☐	☐
Music	☐	☐
Education	☐	☐
Programming	☐	☐
Comms	☐	☐

How much have you spent on games in the last year/last two months?

	Two months	Year
Less than £50	☐	☐
£50-£150	☐	☐
£150-£300	☐	☐
Over £300	☐	☐

How do you buy your games? (tick all used in the last year)

- Independent retailer ☐
- High Street store (Dixons etc) ☐
- Mail Order ☐
- Dodgy street markets ☐
- Classified advertisements ☐

How much do you expect to spend next year/next two months on 'serious' software?

	Two months	Year
Less than £50	☐	☐
£50-£150	☐	☐
£150-£300	☐	☐
Over £300	☐	☐

How do you buy your 'serious' software? (tick all used in the last year)

- Independent retailer ☐
- High Street store (Dixons etc) ☐
- Mail Order ☐
- Classified advertisements ☐

Do you use PD libraries?

- Yes ☐
- No ☐

SECTION THREE: MAGAZINES

How long have you been reading *NCE*?

- This is the first issue bought ☐
- A few months ☐
- A year or so ☐
- Since the beginning ☐

How regularly do you buy NCE?

- Subscriber ☐
- Every week ☐
- Two or thee times a month ☐
- Once a month ☐
- Occasionally ☐

What was you favourite article in this issue?

....

Rate the following sections of *Express* out of 10

- News ☐
- FrontEnd ☐
- The Week in View ☐
- Hardware reviews ☐
- Software reviews ☐
- Feature articles ☐
- Games Week ☐
- Competitions ☐
- Machine-specific columns ☐
- Express mail ☐
- Centrefold ☐
- Programming ☐
- Circuit City ☐
- Tech Tips ☐
- PD Column ☐
- Console Zone ☐
- Whole Wired World ☐
- Express On-line ☐
- Reader advertisements ☐
- Recruitment advertisements ☐

Which sections would you like to see more or less of?

	More	Less
News	☐	☐
FrontEnd	☐	☐
The Week in View	☐	☐
Hardware reviews	☐	☐
Software reviews	☐	☐
Feature articles	☐	☐
Games Week	☐	☐
Competitions	☐	☐
Machine-specific columns	☐	☐
Express mail	☐	☐
Centrefold	☐	☐
Circuit City	☐	☐
Tech Tips	☐	☐
Programming	☐	☐
PD Column	☐	☐
Console Zone	☐	☐
Whole Wired World	☐	☐
Express On-line	☐	☐
Reader advertisements	☐	☐
Recruitment advertisements	☐	☐

What other magazines do you read apart from *Express*?

- Amiga Format ☐
- ST Format ☐
- PC Plus ☐
- Amstrad Action ☐
- Commodore Format ☐
- Your Sinclair ☐
- ACE ☐
- The One ☐
- Zero ☐
- Raze ☐
- Personal Computer World ☐
- Byte ☐
- What Personal Computer? ☐
- Popular Computing Weekly (sorry, bad joke)

What do you like about them compared to *Express*?

....

....

SECTION FOUR: ABOUT YOU

All personal details will be treated in confidence.

Are you male or female?

- Male ☐
- Female ☐

How old are you?

- Under 13 ☐
- 13-18 ☐
- 17-25 ☐
- 26-35 ☐
- 36-50 ☐
- Over 50 ☐

What is your job?

....

How much do you earn?

- Nothing ☐
- Student grant ☐
- £5,000-£8,000 ☐
- £8,001-£10,000 ☐
- £10,001-£15,000 ☐
- Over £15,000 ☐

What county do you live in?

....

SECTION FIVE: PRIZE COMPETITION

My suggestion for a really good article in *Express* is (max 50 words) ....

....

....

....

....

....

....

Name ....

Address ....

....

If I win a runners-up prize I would like a subscription to *New Computer Express* and:

- ST Format ☐
- Amiga Format ☐
- PC Plus ☐
- Amstrad Action ☐
- Your Sinclair ☐
- Commodore Format ☐
- Sega Power ☐

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9 PIN 80 COLUMN		draft/nlq	£
STAR	LC-10	144/36	125
STAR	LC-10 colour	144/36	166
STAR	LC-10 colour comm 64	144/36	166
CITIZEN	120D PLUS	120/25	105
CITIZEN	120D PLUS comm 64	120/25	105
CITIZEN	PRODOT 9	300/60	265
SEIKOSHA	SP2000 (21k buffer)	200/40	199*
SEIKOSHA	MP1350	300/50	359*
PANASONIC	KXP 1180	192/36	139
MAN. TALLY	MT 81	130/26	104
OLIVETTI	DM 100SPR	200/30	119*
EPSON	LX 400	180/30	135
9 PIN 136 COLUMN			
STAR	LC-15	180/45	255
CITIZEN	PRODOT 9 x	300/60	345
PANASONIC	KXP 1592	216/45	255
SEIKOSHA	MP5350	300/50	499*
24 PIN 80 COLUMN			
STAR	LC24-10	170/57	195
CITIZEN	SWIFT 24	192/64	239
CITIZEN	PRODOT 24	200/60	369
PANASONIC	KXP 1124	192/63	219
SEIKOSHA	SL92 (42k buffer)	240/80	299*
24 PIN 136 COLUMN			
STAR	LCX24-15	200/67	325
STAR	XB24-15	240/80	510*

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VISA AMERICAN EXPRESS

NON-IMPACT PRINTERS

		£
SEIKOSHA	OP105 LED (desktop size, takes legal paper)	1299*
STAR	LASER 8	1179*
STAR	LASER 8 DUAL BIN	1599*
H. PACKARD	LASERJET II	1199*
H. PACKARD	LASERJET III	1299*
OLIVETTI	PG 306	899*
CANON	BJ130 INK JET	519

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OLIVETTI PG306
LASER PRINTER
£899 INCLUDES ON-SITE WARRANTY

PLOTTERS AND SCANNERS

HITACHI	681	A4/A3	PLOTTER	520
HITACHI	674	A4/A1	PLOTTER	2149*
(includes one year on-site warranty)				
PANASONIC	FX-RS505		SCANNER	919
(with I/F card, cables, IMAGE AND OCR software)				
NISCAN	HAND SCANNER			139
NISCAN	OCR software			189

DRIVES

CITIZEN	OSDD 05A-WD 3.5" 720K in 5.25" KIT	59
CITIZEN	OSDA 39C-WD 3.5" 1.44mb in 5.25" KIT	69
CITIZEN	OSD 76A-WD 3.5" 720K AMSTRAD KIT	59
INTERNAL	5.25" 1.2mb	59
INTERNAL	5.25" 360K	69
JAVELIN	HC20 20mb XT HARD CARD	185
JAVELIN	HC30 30mb XT HARD CARD	199
FILECARD	HC40 40mb AT HARD CARD	229
KYOCERA	KC 20B(s) 20mb XT/AT DRIVE, 3.5"	138
KYOCERA	KC 30B(s) 30mb XT/AT DRIVE, 3.5"	158
KYOCERA	FRAME 5.25" kit for 3.5" hard drives	5

DRIVE CONTROLLERS AVAILABLE - CALL FOR DETAILS.

CABLES AND ACCESSORIES

PRINTER CABLE	1.8 metre	8
PRINTER CABLE	3.0 metre	9
SERIAL CABLE	1.8 metre	10
T SWITCH	2 way serial	18
T SWITCH	2 way parallel	18
T SWITCH	2 way serial crossover	25
T SWITCH	2 way parallel crossover	25
BUFFER	64k in-line	79

ACORN A3000
1Mb RAM KIT
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ALL OUR COMPUTERS INCLUDE A MONITOR.

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ALL MODELS INCLUDE ONE YEAR ON-SITE MAINTENANCE

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PC 10	DD	535	665	685	775
PC 20	HD20	675	795	845	945
PC 30	HD20			967	1128
PC 40	DH40			1229	1379

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SPC 3000 SD	483	589	789
SPC 3000 DD	569	659	859
SPC 3000 HD20	739	839	1039
SPC 6512 DD		919	1119
SPC 6512 DD HD40		1109	1309

HYUNDAI

		MONO £	EGA £	VGA MONO £	VGA COLOUR £
16TE	SD	419	699		
16TE	DD	459	759		
16TE	HD30	619	919		
286x	SD			639	819
286x	HD40			939	1119

HYUNDAI 16TE
£419 MONO XT AND MONITOR

HYUNDAI 286X SD
£1099 HD 40 AND VGA MONITOR

PORTABLES

SHARP	4602		DD	789
SHARP	5541	286	HD40	2099
SAMSUNG	S5200	286	HD32	1707*
(includes on-site maintenance)				

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MONITORS

				Price £
MONO	HYUNDAI	HMM1200	12"	65
MONO	PHILIPS	BM 7513	12"	69
MONO	PHILIPS	BM 7913 FST	12"	80
MONO	SAMSUNG	MA 2671	12"	81
MONO VGA	PHILIPS	BM 7749 FST	12"	107
MONO VGA	SAMSUNG	ML 2611	12"	81
MONO VGA	SAMSUNG	ML 4571	12"	95
MONO A4	SAMSUNG	MP 5671	A4	634
(includes card and software)				
CGA	PHILIPS	CM 8833	14"	199
EGA	PHILIPS	CM 9053	14"	249
EGA	PHILIPS	CM 9073	14"	289
EGA	SAMSUNG	CM 4551	14"	281
VGA	PHILIPS	3CM 9809	14"	325
VGA	SAMSUNG	CJ 4581	14"	281
MULTISYNC	SAMSUNG	CT 4581	14"	340

ALL MONITORS INCLUDE ON-SITE WARRANTY EXCLUDING THE HYUNDAI HMM 1200.

MDA/CGA CARD with PRINTER PORT	45
MDA/CGA/EGA CARD	99
VGA CARD	129

UPGRADES AND ENHANCEMENTS

MDM2400 PC CARD MODEM
£135 INCLUDING SOFTWARE

AKHTER	MDM 2400 PC CARD MODEM	135
FAXTEL	FAX SWITCH (auto switches calls to fax or phone)	69
KEYBOARD 84	84 KEY UK LAYOUT XT	41
KEYBOARD 102	102 KEY UK LAYOUT XT/AT	52
RAM CARD	576K - XT	27
RAM CARD	2Mb - specify XT or AT	93
SERIAL MOUSE	includes DR Halo III software	38
MULTI I/O CARD	XT - RS232/printer/clock/ games/floppy	54
I/O CARD	AT - RS232/Printer	54
I/O CARD	XT RS232	19
UPS	250W	199

MEMORY - call for prices of SIMM's, SIP's and DRAM's.

SUPERDEALS

SCHNEIDER	220 AT MONO PC SYSTEM	909
SCHNEIDER	20Mb HARD DRIVE KIT	199
HYUNDAI	360K DISK DRIVE	45
YE DATA	720K DISK DRIVE	49
SHARP	JX 9300 LASER PRINTER	949
SHARP	JX 720 INK JET PRINTER	649
MICROVITEC	1431 DS4 - BBC MONITOR	169
MICROVITEC	1451 MS4 - BBC MONITOR (metal case)	229
MICROVITEC	1456 DL2 - NIMBUS MONITOR	249
MIRACOM	COURIER HST MODEM 9600/ V22bis/V22/V21/V23 & MNP	539
IBM	MODEL 30-021	849
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GAMES ON THE CHEAP

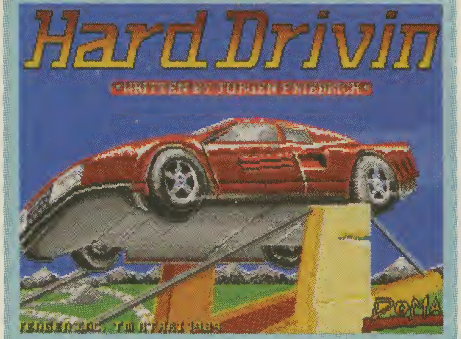
Pro Tennis Tour

Just one of the games on the Challengers compilation

Gone are the days when compilations featured games about as appealing as the green socks your granny gives you on Christmas morning. For around £30 you can now buy some of the year's biggest titles. So here's a quick run down of some of the more notable compilations available in the run up to Christmas

DRIVER
A
B
C
D

• *Powerdrift and...*



...Hard Drivin, just two of the motor racing games on Domark's Wheels of Fire bundle.

Domark's *Wheels of Fire* compilation features last Christmas's big car racing games: *Hard Drivin', Chase HQ, Turbo Outrun* and *Powerdrift*. The C64 version of the compilation includes the much-awaited *Hard Drivin'* which has never previously been available on the C64.

Beau Jolly's *Power Pack* comes with the classic *Xenon II, Bloodwych* (a 2-player adventure), *TV Sports Football* (an American football simulator) and *Lombard RAC Rally* (yet another racing game).

Certainly the best of the compilations is UBI Soft's *Challengers* which features tennis, aircraft, football, car and ski simulators in the form of *Pro Tennis Tour, Fighter Bomber, Kick Off, Stunt Car Racer* and *Super Ski*. Not bad for £29.99.

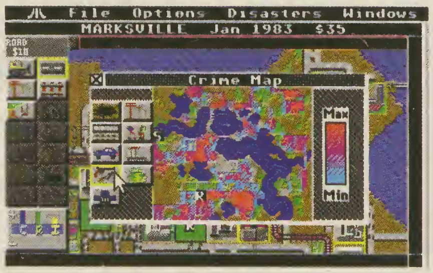
MARK HIGHAM'S Games Week

SIM CITY: FROM STRENGTH TO STRENGTH

Fed up with playing *Sim City*? Bored by the similarities of each game? I prescribe a dose of the *Sim City* architecture disks.

They replace the graphics already supplied with the game so that you get a completely different set of residential zones and commercial or industrial zones. They also give you more problems to watch out for and some new scenarios. However, the game is still the same so if you're starting to feel that *Sim City* is a little like building a town out of Lego bricks you're not going to lose that impression after playing with the architecture disks.

There are two new disks available each coming with three different scenarios. The first is architecture disk one set in the distant past. The first scenario is ancient Asia where farmers and craftsmen must be encouraged to thrive in their little villages. The second, set in medieval times places you in the role of king of the castle, thriving on the high tax revenues collected from your people. The last scenario is set in the wild west in 1849. You need to develop a community to support the gold-digging miners and watch out for such disasters as contaminated water, rattlesnakes and jackals.



• **Sim City:** *the original is like building with lego bricks. Now two new architecture disks are set to improve things*

Architecture disk two is based firmly in the future. The first scenario puts you in the USA during the 21st Century. The city is highly commercialised and you now need to buy spaceports to transport passengers and goods on interplanetary flights. Instead of ordinary power stations you now have a choice between nuclear fusion or fission and must be ever careful of the likelihood of thermo-nuclear pollution.

In the second scenario you're placed in Europe in the year 2155. The continent is united and your job is to build a new capital for Europe, encouraging international research, trade and production. A monorail transport system and space ports make life more appealing in the new Europe but disaster is just around the corner.

The last scenario on this disk puts you on the moon where mining resources and reduced gravity enable you to grow quickly. However, extra-terrestrial life-forms, plagues and lack of oxygen threaten to disrupt your progress at every turn.

The architecture disks aren't going to miraculously eradicate the problems with the original *Sim City* but they are set to make it interesting enough to keep you addicted a little while longer – at least until *Sim City 2* comes out next year.

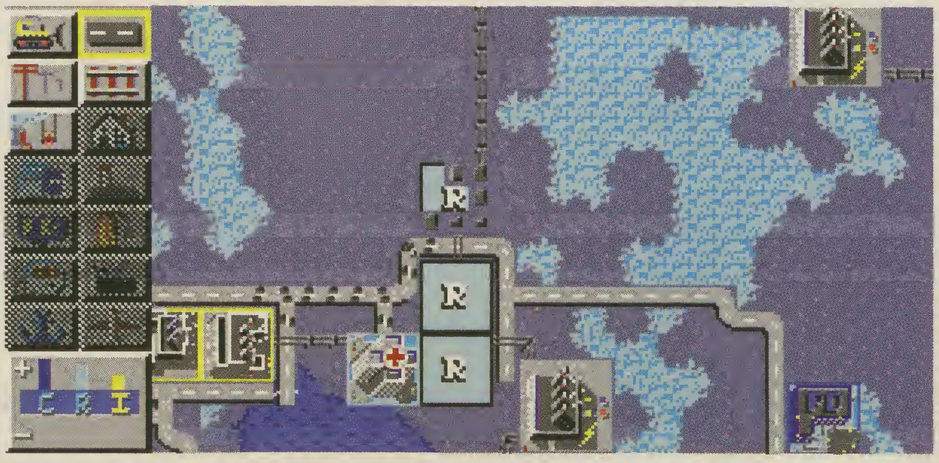
MORE TURRICAN MAGIC

After repeatedly stating that *Turrican* would never make it onto the ST, Rainbow Arts has released an ST version this month. It's hardly had time to climb the charts before Rainbow Arts announced plans to produce a follow-up called *Turrican 2 – the Final Fight,* though how final it's likely to be must surely depend on its success.

If you found the original *Turrican* difficult then prepare for some mega torture in *Turrican 2.* I've had a chance to play Amiga and ST demos of the first level and it's something of a monster. The shoot-'em-up action has been greatly enhanced by some tremendous visual effects. In level one you walk through waterfalls which behave like waterfalls, over bridges that flex under every footstep and through a nightmarish battle against wind which unrelentingly tosses you backwards.

However, what Rainbow Arts is most excited about are the sound effects. Lively sampled tunes not only introduce each level but have been correctly synchronised to come in at exactly the right moment. Sampled speech and other complimentary sound effects accompany the real action.

Besides ST and Amiga formats, *Turrican 2* is being released on the C64, CPC and Spectrum. All are due out early next year. ■



•*The* **Sim City** *moon colony is just one of the six new environments provided for the game on the architecture disks.*

CHEATS GALORE FOR NINJA WARRIOR AND SILKWORM – OR HOW TO MAKE YOUR ENEMIES HOPPING MAD

This week we have cheats for two of Random Access's most addictive games.

For those Amiga owners who are going mental trying to get through *Silkworm*, here are some handy tips.

There are two versions of *Silkworm* in existence and the cheat is different for both of them. Try hitting the HELP key first of all. This should activate the cheat mode giving you infinite lives as well as enabling you to hit the number keys to go directly to a new level.

However, if you own the second version of the game a message appears saying, "Congratulations, you have found the cheat mode... unfortunately, it has been ZZAPPED!"

No need to worry, though. Instead, go straight to the control selection screen and type SCRAP 28. You will now be able start the game with the cheat active.

For ST owners hooked on *Ninja Warriors*, try these for size.

Hold down the ALTERNATE key and type the following words to make all sorts of weird effects happen:

- CASABLANCA Screen goes black and white
- GENESIS OF THE DALEKS The screen inverts
- THE TERMINATOR Your ninja body parts explode when you die
- MONTY PYTHON Enemies come onto the screen backwards
- SKIPPY The enemies bounce repeatedly
- A SMALLSTEP FOR A MAN (with no space between SMALL and STEP) Jumping baddies now leap right off the top of the screen
- EAT TO THE BEAT You can now press Q to toggle slow motion mode on and off

Switch the whole lot on and believe me, *Ninja Warriors* will look and play like nothing you've ever seen before.

THE 16-BIT TOP TEN

F-19 is still hanging on in the top slot but *Supremacy*, just released on the ST, could knock it from grace next week. A surprising new entry is *M1 Tank Platoon* from Microprose. This tank simulator has pushed Empire's own tank game down a few notches. It's amazing just how these detailed simulators (you can hardly call them games) are scaling the charts of late.

For the week ending 10th November

1	***F-19 Stealth Fighter***	**MICROPROSE**	ST/AG/PC
2	***Lotus Turbo***	**GREMLIN**	ST/AG
3	***Kick Off 2***	**ANCO**	ST/AG/PC
4	***Supremacy***	**VIRGIN**	ST/AG
5	***Power Pack***	**BEAU JOLLY**	ST/AG
6	***Indy 500***	**ELECTRONIC ARTS**	AG/PC
7	***M1 Tank Platoon***	**MICROPROSE**	ST?AG/PC
8	***Captive***	**MINDSCAPE**	ST/AG
9	***Wheels of Fire***	**DOMARK**	ST/AG
10	***Team Yankee***	**EMPIRE**	ST/AG

ST – ATARI ST AG – COMMODORE AMIGA PC – IBM PC OR COMPATIBLE
Chart compiled by GALLUP © European Leisure Software Publishers Association.

STRIDER 2: HACK 'N' SLASH WITH LASER GUNS

US GOLD • £19.99

Arcade conversions and movie licences reign supreme over the Christmas period. The story of *Strider 2*, though, is an interesting paradox. Instead of being a feeble attempt at reproducing hit arcade gameplay, *Strider 2* has actually been devised on 16-bit machines and the intention is to produce an arcade game out of the idea sometime next year.

The original *Strider* game was one of US Gold's biggest ever hits. It succeeded in collecting coveted awards after its release last year and was widely acclaimed as one of the most impressive interpretations of an arcade licence.

In *Strider 2* you play with the same acrobatic hero armed with a sabre which you can use to hack the heads off of anything that comes your way. When the action gets too intense, simply leap majestically into the air and sail over your enemies head. But there are many new additions *Strider 2*.

First off there is a challenging exploration element to the sequal. Instead of confronting a scrolling level in which one legion of enemies after another is tossed into your path, you have to find your way around a multitude of platforms and pathways in a bid to discover the end of the level. In level one you simply need to advance horizontally but by the time you reach level two you're in for some serious headaches.

The two towers level is arranged as two indivdual columns comprising sets of platforms and lifts. The idea is to scale the platforms and climb to the top of the first tower from where you cross to the second. You then have to try to climb down to the ground.

In other levels you must constantly attempt to sail downwards. When you reach the end of each level you then have to confront a massive enemy sprite which must be totally obliterated before you can to proceed to the next.

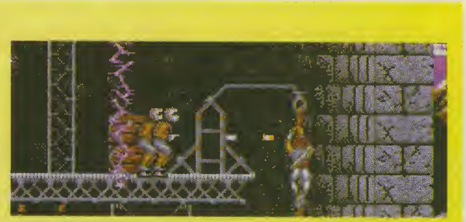
To help you overcome the end of level bad guy you can transform into a robot providing you have collected enough pods on your travels. Each pod collected buys you more time as a robot. Whereas Strider's sabre only has a short range, when you change into a robot you are armed with a laser gun which fires across the entire length of the screen. It is so powerful it can wipe away the end of level bad guy after just a handful of well-directed shots.

One drawback is that the robot is only capable of moving horizontally so you can't use it to scale platforms. However, it does offer limited protection against enemy bullets so it can very worthwhile changing into a robot when you get the chance.

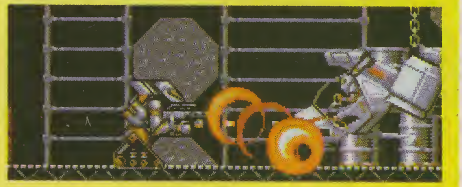
Strider 2 is a very competent arcade-style game. The animation is smooth, the levels are colourful and varied and the extras give it the edge over more straightforward scrolling games.

In the year since the release of the original Strider game, though, we've come to expect much more from our games. In the 16-bit arena particularly, shoot-'em-ups have become much faster, visuals damned near enormous and sound effects positively brilliant. *Strider 2* doesn't have any of these ingredients and as a result has a very dated feel to it.

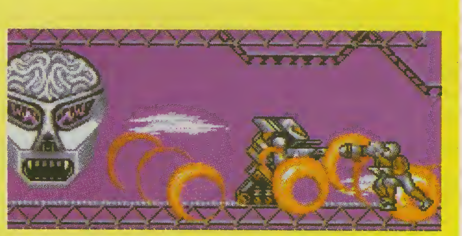
If you buy every arcade game that hits the shelves, *Strider 2* is going to be an absorbing challenge. But if you only buy one arcade game every six months, hold out for something better.



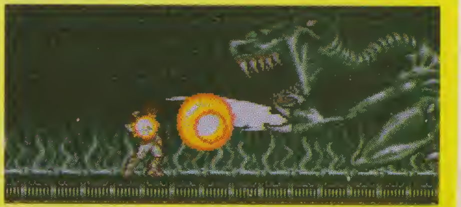
• Complicating the action in Strider 2 are all manner of new obstacles from laser doors to lifts. Can you get to the top of this installation in time to pick up those bonus pods?



• Dash down the platform in level one, somersault over those hunch-backed zombies then change into a robot. Aim for the cockpit of the helicopter and give it everything you've got.



• By the time you get to level three the action has become seriously frenetic. Change into a robot each time you see that end-of-level head and blast it before it floats off screen again.

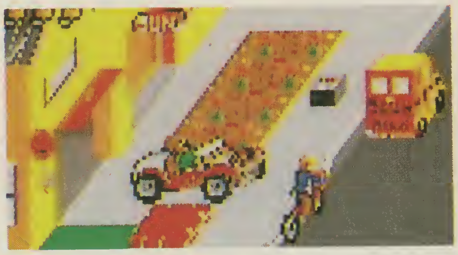


• Race ll the way through to the end of level three and you meet this awesome beast. Aim a few well-timed blasts at his head and he's gone in a flash!

THE CONSOLE ZONE

Your weekly guide to console gaming with Richard Frederick.

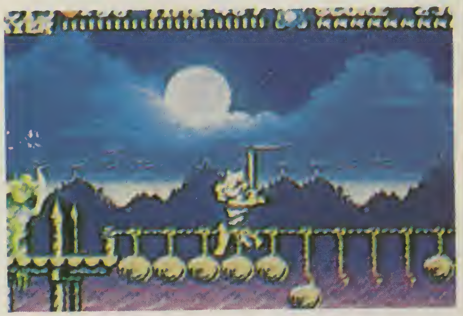
ATARI LYNX



• **Paperboy:** *One for malicious brats everywhere.*

Paperboy has been released for the Lynx in Japan. This popular coin-op has you riding through American suburbia delivering the morning papers while avoiding milk trucks, boy racers and out-of-control lawn mowers. Extra points are gained by breaking the windows of non-customers. Paperboy costs 4300 yen (£17) on the Lynx and is also available for the Gameboy, NES and Sega Master System.

NINTENDO SUPER FAMICOM



• **Actraisers**- *Active and creative, need we say more?*

More idiosyncratic Japanese software has started to appear on Nintendo's new 16-bit console. *Actraisers* comes from Enix, the same company that produces all those console games that cause massive queues outside Japanese stores on their first day of release.

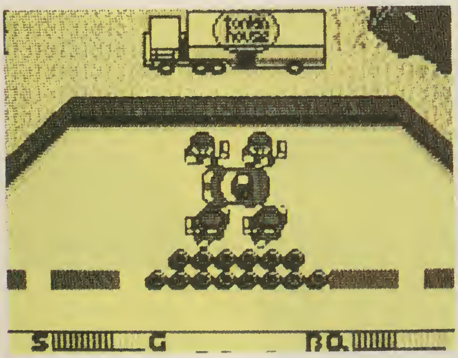
Enix is billing its first Super Famicom release as 'active and creative' and has employed its most experienced games engineers on the task of producing what could be another blockbusting title.

WE WANT YOU!

Come on you lazy lot, where are all your tasty tips and hot hint? We need your playing tips for any video games available for the Megadrive,Gameboy, Lynx, Game Gear, Sega Master, PC Engine, NES and Neo-Geo. Write to The Console Zone at the usual address.

NINTENDO GAMEBOY

Roadblaster is the latest driving game to race onto this busy handheld baby. Tonkin House has produced a race-sim packed with features including pitstops and multiple drivers. *Roadblaster* costs 3300 yen (£13).



• **Roadblaster,** *Nintendo's newest racing game.*

PLAYING TIP

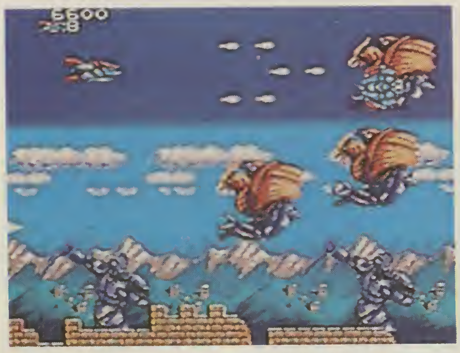
Who needs pizza power when you've got this neat *Teenage Mutant Ninja Turtles* cheat for instant energy: press pause then [Up], [Up], [Down], [Down], [Left], [Right], [Left], [Right], [B] and [A]. You can only do this once during a game.

SEGA MASTER SYSTEM PLAYING TIP

Continue *Thunderblade* by simultaneously pressing [Lower Right] and [Button 2] after losing your last life.

SEGA MEGADRIVE

Did you enjoy Capcom's brilliant robo-shooter, *Side Arms*? Get ready for more of the same in *Heavy Unit* from Kaneko and Toho. In this horizontally-scrolling shoot'em-up you control a useful piece of military hardware which can transform from a fighter plane into a heavily armed and armoured robot. Lots of extra options help this cart stay ahead of the competition, including a four-word password system to instantly access already attained higher levels and a game record/replay facility. *Heavy Unit* costs 6400 yen (£25).

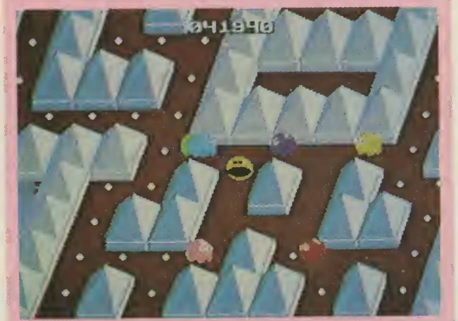


• *Get heavy on your enemies with* **Heavy Unit.**

PLAYING TIP

Continue the *Last Battle* by simultaneously pressing [A], [B], [C] and [Start] on the title screen. ■

NINTENDO ENTERTAINMENT SYSTEM



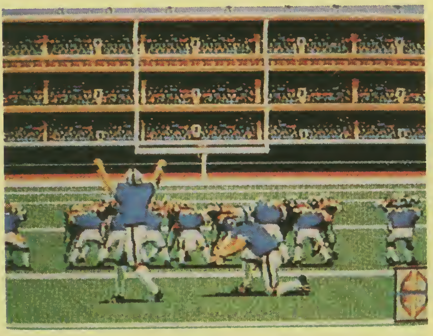
• **Pacman** - *the one that started it all - is back.*

Pacman is back in another dot-filled ghost-infested adventure on your NES. *Tengen*, born from Atari Games, has released Namco's *Pacmania* on the 'world's number one video games system'. *Pacman* can now jump for joy as his home has been turned into a series of three-dimensional multi-directional mazes. Tengen says, "You'll love the new challenging mazes - they come in so many mind-boggling shapes, they'll turn you into a certified Pac-Maniac!"

PLAYING TIP

Get an extra 5000 points in *Gradius* by flying through the mountains with gaps in them.

NEC PC ENGINE



• *Now you can play American Football without breaking you neck.*

Cinemaware has converted its successful arcade simulation of *American Football* onto the PC Engine. *TV Sports Football* has all the film-like presentation you'd expect from this top-notch producer of 'interactive movies'. *TV Sports Football* allows one to five players to compete and lets your quarterback call audibles and reverse direction plays at the line of scrimmage, and gives you control of both field goals and punts. You can even assign three different jobs to three defensive players - though you'll still have to endure the American sports announcer. Lead me to those cheerleaders!

PLAYING TIP

For a Level 19 fighter in *Dungeon Explorer* enter the passcode: AEPAJ-DPIAA

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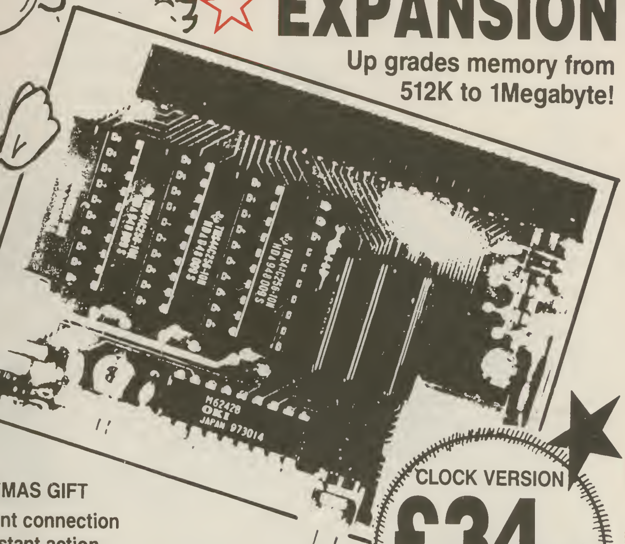

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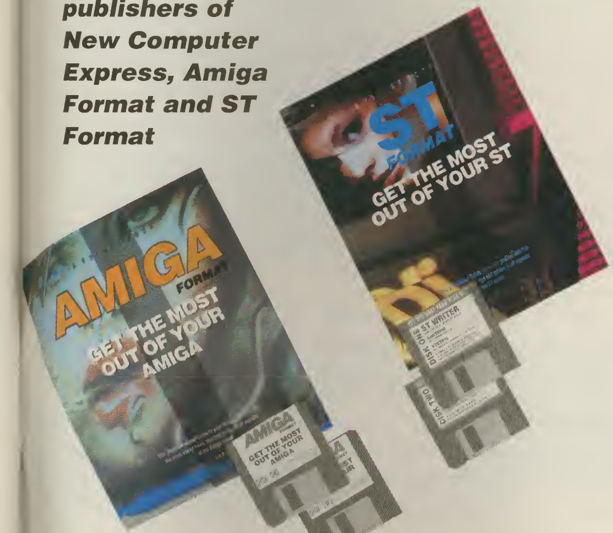

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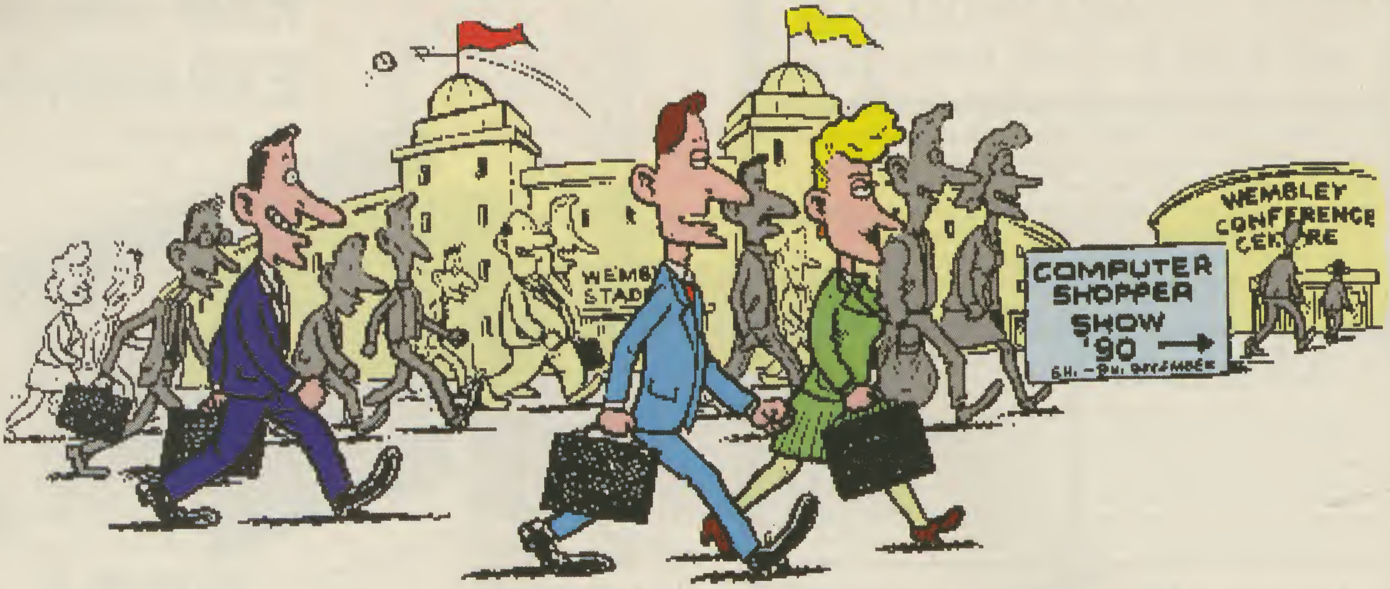

Super-Shopaholic, Dave Golder tells you who's offering what and where you can pick up all those brilliant bargains at this year's Computer Shopper Show. But there's more to it than just splashing out cash – how about watching the Kick Off final?...

SHOP 'TIL YOU DROP

This December you won't have to go to a pantomime to enter an Aladdin's cave, according to the organisers of the second Computer Shopper Show. Blenheim Database Exhibitions promises visitors a high-tech wealth of wonders "with exhibitors slashing prices to the bone in the light of the expected volume of sales."

This is only the second *Shopper Show*, but the inaugural event last December was such a runaway success that the show is already a major date on the computer exhibition calendar.

This year's show takes place at the Wembley Conference Centre from Thursday December 6 to Sunday December 9 and a massive 40,000 visitors are expected to pour through the doors over the four days. And with 280 exhibitors ranging from independent retailers to major names such as Acorn, Atari and Commodore, few would dispute Blenheim's claim that: "This will be the world's largest pre-Christmas computer shopping spree."

The show is indeed the perfect place to pick up Christmas bargains. "Intense competition is the key to it all," according to Michael Meakin, Blenheim's head of organisers. "Exhibitors realise that people come to the show to save money on purchases and are reacting accordingly."

An exit poll of attendees at last year's show revealed that as many as 95 per cent reckoned they had made substantial savings. Although the 1990 show is so close to Christmas it will also be the UK public's first opportunity to buy or try out up to 100 new products ranging from software such as *Colossus Bridge* and *Final Conflict* to the Olivetti PC/S range of small business machines.

The computer companies see the show as the perfect opportunity to make contact with their customers. "Shopper is ideal for both sales and promotional purposes," reckons Atari's Bob Katz. "It is perfectly timed to attract record crowds in that all important period immediately prior to Christmas. Of equal importance to us is that it provides the breathing space in which to do business."

The console giants, Sega and Nintendo, are also keen to exploit the show in the run up to what they see as the "Console Christmas." As Philip Ley, Sega Marketing Manager, explains: "The event is perfectly timed to play a key role in our overall seasonal push for Christmas. We view the show as being an integral part of maintaining the highest profile at this most important time of year."

If with all these glorious opportunities around, you feel a bit in awe and at a loss as to what to buy, fear not. Go to the advice centre where experts will dispense free unbiased guidance on buying computers and peripherals. Additionally, both the London Chamber of Commerce and the DTI will be present to help people with small businesses. And, of course, user groups will

FIVE THINGS YOU SHOULD KNOW ABOUT THE SHOW

- Amongst the stranger artifacts you'll be able to pick up at the show are furry covers for your mice, orthopaedic chairs, answering machines for car phones and indestructible pen sets.
- The Show is all set for a major fundraising effort on behalf on the Starlight Foundation. This is a charity which was set up in 1982 by *Dynasty* actress Emma Samms and helps make the wishes of terminally ill children come true. So if you do make huge savings at the show, you can afford to dig deep into your pockets and give this worthy charity a donation.
- Other products on sale prove that even the computer world can go green. Aside from a new package based on rain forests and endangered species that live in them, recycled photocopying and printer paper will also be on sale.
- The show is vying for a place in the *Guiness Book of Records* with the largest number of Father Christmases ever seen under one roof. Staff manning the stalls have been asked to turn up in Father Christmas costumes so visitors to the show can expect to be confronted by between 600 and 1,000 jolly, fat, bearded men in red.
- Visitors will have the chance to take advantage of over £2 million worth of special offers. Acorn, for example, will be giving away thousands of pounds worth of vouchers to spend at Acorn stalls at the Show.

COMPUTER SHOPPER SHOW 90
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SAVE!

NEW PENCE
50

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Sunday 9 December 10am-5pm

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Only valid Saturday or Sunday December 8 or 9.

OR SAVE £3 off the price of a family ticket (two adults and two children)

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be there to help you with problems over particular machines.

Another major feature of the show this year will be New Horizons, a four day conference sponsored by Acorn aimed at showing visitors the latest technological developments in the computer world. It will include seminars on CD ROM, image processing, hypermedia, desktop publishing, music and education.

The conference will also contain two market debuts. The Hypermedia For All presentation will reveal *Genesis 2*, due for official launch in January while a new file transfer system designed for improved emulation under RISC OS launched by Acorn recently will be shown off during the PC Emulating seminar.

Tickets for Shopper Show 1990 are £5 for adults and £3.50 for children. A family ticket (two adults, two children) will cost £12. If you book in advance on the 24 hour hotline – 051-357 1736 – there is £1 off each ticket. Doors open at 10am each day (except Saturday - 9am) and the show finshes at 6pm each day (except Sunday – 5pm). Get those cheque books and credit cards ready.

TURTLE MANIA

The Entertainment Hall is an innovation at this year's show, housing *Entertainment Shopper*. The place to visit to test out games and marvel at the latest super-fast graphics, both the major console companies, Sega and Nintendo, will be very much in evidence.

• *You've read the comics, seen the film, eaten the breakfast serial now play the game.*

Nintendo is hoping to whip up some Turtle mania to promote *The Mutant Machine*, its christmas bundle for this year. The package combines the Nintendo Entertainment System with Konami's new game *Teenage Mutant Hero Turtles*. There will be be a whole host of other Turtle promotions including a special launch offer for *The Mutant Machine* allowing Show visitors to buy it for just £79.99, a full £20 less than it will cost in the shops.

Another kids favourite, *Mario* – reckoned to be the most famous computer generated character in the world – will be on hand for personal appearances.

Nintendo is also taking the opportunity to show off its Game Boy hand-held console. Mike Hayes of Serif, Nintendo's distributor in the UK, explained: "When we launch Game Boy we will not be indulging in large television advertising so the *Computer Show* will be the first time that many people in this country will have seen this exciting new product."

Although Sega's rival product, the GameGear, is not yet officially available in the UK, Virgin Mastertronics, Sega's UK distributors, will be on hand with demonstration models of the latest Sega consoles on its stand. And doubtlessly a few unofficial GameGears will find their way into the show.

SHOPPING AROUND

Making its first appearance at the show will be the ARC's *Cyber Assault*, billed as "the first accurate simulation of a humanoid figure travelling in an unrestricted 3D world."

More 3D action comes from Mandarin Software which will be promoting *STOS 3D* which allows the creation of 3D objects and space in STOS.

Also of interest to Amiga and ST users will be new games from Impressions, including *The Last Starship, Striker* and *Win A Billion*, and CDS, including *European Superleague* and *Tank Attack..*

• *Will it or won't it appear? The* **CDTV.**

For Amiga fans in particular there will be a number of products available in Amiga versions for the first time, including *Flexidump* from Care Electronics and a doublepack from Microtec consisting of *Bugbash* and *Nucleus*. An improved version of LCL's *Micro English* educational package which now covers oral communication and corresponds to the 1991 syllabus will also make its first appearance.

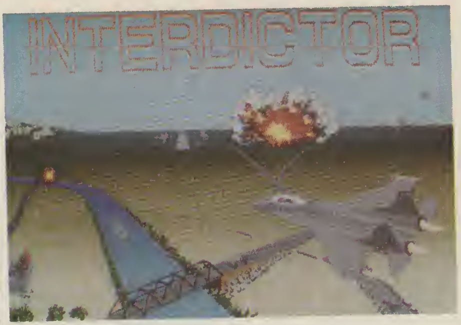
There are also plans for Commodore's long delayed CDTV to have a viewing at the show, but with the yet another announcement from the company about the postponing of a launch date, the exact form its appearance will take, if it appears at all, remains uncertain.

ST devotees can look forward to new products for their machine. B Bytes will unveil several, including the *B Write* wordprocessor and the art package *Kid Paint*. Version 1.4 of *Supercharger* which allows the ST to run all MS-DOS applications at 8MHz will be launched by Condor Computers while Kuma will be revealing *K-Spread 4*, an accounts package, and *Adimens 3.0*, a relational database.

HIGH FLYING WITH ACORN

Acorn is offering a unique flying experience to all budding pilots at the Show. Built into the Acorn stand will be a realistic fighter plane cockpit complete with ejector seat, joystick and flightdeck instruments.

Once in the cockpit, visitors will experience the thrills and spuills of the Archimedes flight simulator *Interdictor* displayed on a large screen. A real Concorde pilot will also be on hand on the Saturday morning to take on all challengers, so you can see how you match up to the professionals.



• **Interdictor:** *challenge the professionals to a game*

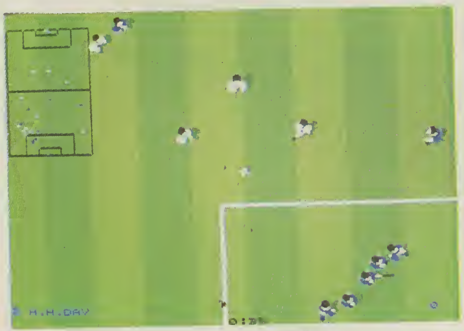
This special attraction is part of Acorn's Test Flight promotion for its major product range *The Learning Curve*. Visitors to the stand will also be able to take part in a competition with prizes including a trip on Concorde, helicopter flights and flying lessons.

CUP FINAL KICKS OFF

Wembley is host to a very different sort of Cup Final this December. The fact that the actual venue is the Conference Centre and not the Stadium must give you a clue about the nature of the match.

Over 5000 computer footballers have been competing across the country over the last couple of months for a place in the final rounds of the *Computer Football Association Challenge Cup* being held at *The Shopper Show* on 9 December.

The CFA was formed by Steve Anderson of Mutant Software to promote excellence in the field of soccer simulation on home computers. For its first ever Challenge Cup competition the CFA will use Anco's *Kick Off* and *Kick Off 2* for the matches.



• **Kick Off 2 :** *the official game of the CFAC*

"Support for the competition is amazing. We hope to get a big screen put in at the Show so that supporters and spectators will get a better view. With such a big entry, the players who win their way through to the final rounds will really be worth watching," reckons Steve Anderson.

The eventual winner of the CFAC will scoop the 1990 Challenge Cup and £1000, while the runner up will receive a trophy and £500. The champion will then go on to play a match against the Italian cup winner later in the day. The CFA is also hoping to tempt the French

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11am	CD ROM in Education
12 noon	Schema - A Spreadsheet for the Family
1pm	Image Processing
2pm	PC Emulating and other operating systems
3pm	Music Midi Mania
4pm	RISC Technology in the 1990s
5pm	Desktop Publishing

SATURDAY AND SUNDAY

11am	Hypermedia for All
12 noon	Schema - A Spreadsheet for all the Family
1pm	Programming Made Easy with Basic 5
2pm	PC Emulating and other operating systems
3pm	Music Midi Mania
4pm	Faster Computing
5pm	Designing Documents

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HARD DISKS MADE EASY

Hard disks are expensive beasts, but is it worth investing in extra storage? Express investigates . . .

When you first get a computer with a floppy disk drive it seems such a luxury. Compared to cassettes, disks work at the speed of light. Unfortunately you soon hit their limits – principally the small amount of data they can store.

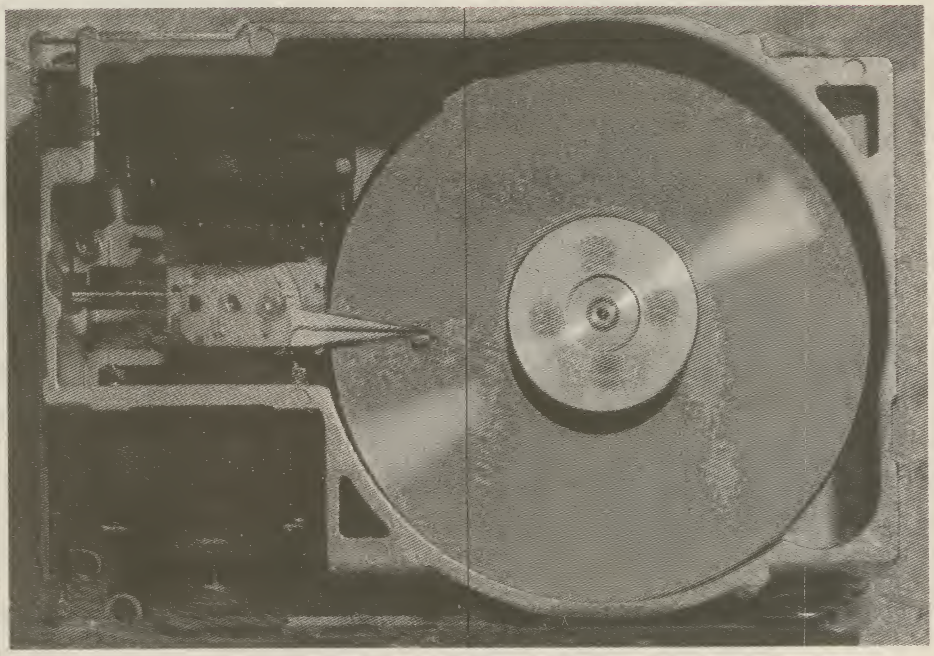
If you ever use a computer with a hard disk drive you will never want to use a floppy disk computer again, it's as simple as that. Hard disks have three great advantages. First, they can hold vast amounts of data and huge programs. Second, you can have all your programs accessible instantly instead of having to find the relevant disks. And third, they are extremely quick.

The smallest hard disk you can get can hold 20 megabytes (20,971,520 characters); the largest common floppy disk drive can squeeze in 1.44 megabytes (1,509,948 characters). An ST floppy disk can be tweaked so it will hold 800K (819,200 characters) so you can see that the leap to a hard disk is a major one – and that's the smallest hard disk drive. You can get drives with upwards of a gigabyte (1,073,741,824 characters) of storage!

The vast spaces of a hard disk allow programs to become more sophisticated as the size of the program code is no longer restricted by the size of the disk. Programs such as desktop publishing applications can be much more powerful – for instance the leading program *PageMaker* is over 1.5Mb long in its latest version and simply cannot be run off a floppy disk.

Hard disks are very fast. Most programs load in a couple of seconds at most, instead of minutes of disk swapping you have to endure with a floppy. Data files can be loaded in a flash.

So they're a valuable addition to your computer armoury. But what should you look for in a hard disk drive?



• The insides of a Western and Digital hard disk. Note the large circular 'platter' and tiny read/write head on a motorised arm

SPECIFICATIONS

There are four measurements associated with hard disk drives:

- **Storage capacity**. Measured in megabytes, this is the amount of data you can store on the disk. 20Mb is the smallest commonly available size, and the norm is rapidly becoming a 40Mb disk.

- **Access time**. Also called 'seek time' this measures how long it takes the disk to find your data, on average. An access time of 70 milliseconds is slow, many disks operate at 40ms, and 20ms and below is lightning fast (and very expensive).

- **Data transfer speed**. Measured in megabytes per second, this records how quickly the disk can read data into the computer's memory. For average sized files the access time is more important than transfer speed.

- **Interleave**. As the platter of the hard disk spins around the hard drive reads data from it. Unfortunately most computers can't handle data as fast as it pours off the disk. To get around this most drives space the data out so that it comes in at a more reasonable pace. The interleave is a measure of the gap between successive blocks of data, and is expressed as a ratio of data to space. The space is not wasted – several pieces of data are placed alternately on the disk to fill up the disk. A 1:1 interleave hard disk is the fastest on paper, but if your computer cannot cope with the data that fast it will actually be slower than a 1:3 or 1:5 disk.

BUYING A DISK

If you have a PC you can shop around and get a disk with the attributes you need. ST, Amiga and Archimedes users are much more limited in their choice, and devices that are in essence the same as a PC hard disk can sell for double the price.

Check through the small ads in *Shopping Express* – you'll find a number of disks on offer. Compatibility is no problem with ST, Amiga and Archimedes drives; if it's stated that the drive will work with that machine then you'll be all right. One feature to look for is 'autobooting'; some disks require you to insert a special floppy before the hard drive will get up and running, autobooting machines just require you to flip the on/off switch. Always choose an autobooting disk if you can.

PC owners have a much more complicated life. Besides having hundreds of drives to choose from, they need an extra gadget called a hard disk controller to get the thing up and running. Unfortunately there are several different kinds of hard disk controllers, which support different kinds of disks. Abbreviations like MFM, RLL, EDSI, IDE, SCSI and ST106 make life harder. In a future article we'll explain what these terms mean, but the important thing is to make sure the controller card matches the disk drive. If you are buying a disk and a controller get them from the same supplier and make it clear you expect them to work together. If you already have a controller get as many details about it as you can and include them with your hard disk order.

You can get around these problems by buying a hard card – that's a hard disk physically welded to the back of a hard disk controller which just plugs into an expansion slot. It's the easiest way, but is a bit more expensive and the drives tend to be low performance models.

Whatever you do, a hard disk is well worth the investment and you'll find your computing life is revolutionised by these superfast disk drives. ■

WHAT'S INSIDE A HARD DISK?

Hard disks consist of rigid ceramic disks, called platters, which spin at several hundred rpm. Devices called 'heads' are controlled by motors that move them around the disk surface reading and writing the data.

Because the hard disk is solidly constructed to high tolerances, it can pack much more data in than a floppy disk. That, combined with the multiple platters and the high rotation speed, gives the hard disk its performance edge.

Because of these fine tolerances, hard disks are notoriously fragile; an *Express* hard drive died after being driven five miles to the photographer's and back! Although this is improving all the time, if you buy a hard drive it will come with a 'parking' program which stores the heads neatly out of the way for moving it. Ignore this program at your peril!

★ POCKET SIZED ★ PC-COMPATIBLE ★ PERSONAL ORGANISER ★

ATARI Portfolio

THE PC IN YOUR POCKET

The new Portfolio from Atari is the world's first pocket-sized electronic organiser that is also a powerful PC compatible computer, with a full QWERTY keyboard and scrolling 80×25 character display.

Portfolio includes everything you would expect from an electronic organiser - an address and telephone book, time manager, diary and sophisticated calculator.

Portfolio also includes several functions that you would not expect - a spreadsheet for your personal budget and expense records, as well as a text processor for typing memos and letters.

And, because Atari's Portfolio is PC compatible, it can communicate with your desktop PC at home, or in the office. You can transfer files from one to the other, to enable you to update your reports and figures with the Portfolio while you are on the move.

FOR ONLY £199 INC VAT

SPECIFICATION

- ★ ***Processor:*** Intel 80C88 at 4.9152Mhz.
- ★ ***Operating System:*** Compatible with MS-DOS 2.11.
- ★ ***Internal ROM:*** 256K containing BIOS, operating system and applications suite.
- ★ ***RAM:*** 128K with an internal RAM disk, configurable from 8K. Externally expandable to 640K RAM.
- ★ ***Keyboard:*** 63 keys, QWERTY, IBM PC BIOS compatible. Buried numeric pad and function keys. Optional key click.
- ★ ***Character Set:*** Extended IBM ASCII (255 characters).
- ★ ***Mass storage:*** credit card sized memory cards (32K or 64K or 128K RAM).
- ★ ***Display:*** Graphics LCD, supertwist technology, MDA compatible, 40 columns x 8 lines, 240 x 64 pixels (with the option to window a full 80 x 25 character display). Keyboard controlled contrast.
- ★ ***Peripherals:*** 60 pin expansion BUS to take serial and parallel ports and memory expansion units.
- ★ ***Size:*** 8" x 4" x 1" (200mm x 105mm x 29mm).
- ★ ***Weight:*** 495 grammes (with batteries).
- ★ ***Applications:*** calendar and diary, address and phone book, Lotus 1-2-3 compatible spreadsheet, text processor, communications software.

COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

5 BUILT-IN APPLICATIONS TO GET YOU ORGANISED!

To get you started, Portfolio comes with a suite of five useful functions built-in, all accessible from a simple menu display.

TIME MANAGER

More than just an electronic diary, the Portfolio Time Manager enables you to plan your appointments via a comprehensive calendar and diary. It can even be programmed to sound an audible alarm at specific times to remind you of important appointments.

CALCULATOR

Your Portfolio will be invaluable in the office or at home as a powerful pocket calculator. It has a full range of functions, including factorial, power and root calculations, all with multi display formats and memories.

ADDRESS BOOK & DIALLER

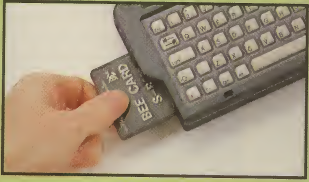
Portfolio has a complete address book facility that allows you to store hundreds of addresses and phone numbers. And, at the touch of a button, you can retrieve any one of them, or search for a specific grouping, such as "all Italian restaurants". And, when you are ready to book your table, hold your Portfolio to your telephone mouthpiece and use its special built-in tone dialler to dial the number for you.

TEXT PROCESSOR

The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.01 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.

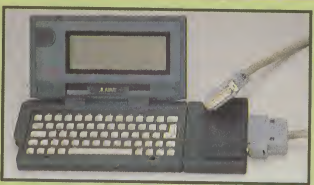


MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.

POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.



INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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PAYMENT: By cash, cheque and all major credit cards.
CREDIT PAYMENT TERMS: Silica are licensed credit brokers - details on request.

Before you decide when to buy your new Atari Portfolio, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Portfolio, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new Portfolio products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service".

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CHAMALEON
Der ATARI ST-Emulator
V1.0
© 1990 MAXON Computer
Autoren: T.Wieger & T.Deufer

AN ST FOR ONLY £80!

If you've got an Amiga and envy some of your old adversary's software, the best emulator yet produced for your machine is now available. Jason Holborn defects to the other side...

ST emulation certainly isn't anything new on the Amiga – MacroSystems' Medusa ST Emulator card has been happily running Atari software for a couple of months now, but that did have one slight disadvantage – the price. Coming in at just under £200, you could easily pick up a real Atari for just a few pounds more, which defeated the object of buying an emulator in the first place. Thankfully though, Maxon's *Chamäleon* ST emulator doesn't suffer from this problem. It works equally as well as the Medusa Card, but still manages to sell for around £100 cheaper than it's rival.Why? Because it's software only.

In many ways, there was no real reason why Medusa needed that ridiculously small PCB – Macro Systems itself admitted that the board handled nothing more than I/O, so it wasn't exactly a crucial part of the Medusa system.

LEGAL EAGLE

Chamäleon comes to you on two disks – one for the Amiga and another in Atari format. Also included is a fairly comprehensive manual that covers the basics of what *Chamäleon* will and won't do, how to install it and even how to use the Atari desktop. The packaging contains the oddest illustration I've seen for quite a while – a camel changing from green to orange. Don't these people realise that a *Chamäleon* is a lizard?

Just like Macro Systems emulator (and indeed, every other emulator under the world), *Chamäleon* isn't just a boot up and go affair (surprise, surprise). As always, things are far more involved than that. The first thing you must do is to find a friendly Atari user and talk them into allowing you to extract the operating system from their computer. Sounds painful I know, but the whole process is actually done through software (thankfully).

Here then, is where we encounter the first problem. Maxon doesn't actually supply such a utility with the *Chamäleon* package, so it's up to you to source a program that will do the job.This isn't really surprising, as rumour has it that Atari is clamping down hard on emulator manufacturers. According to a source in the US, *Chamäleon* is already the subject of investigation by Atari's lawyers, so it may be wise to buy your copy now. It's a familiar story. Atari isn't the first company to object to emulators – Apple has been trying to ban Mac emulators for years now. The funny thing is though, Atari seems perfectly happy to advertise the fact that you can run Mac software on an ST (with an emulator such as HiSoft's Spectre GCR). One cannot help but think that perhaps Atari should practise what it preaches (after all, impersonation is supposedly the sincerest form of flattery!)

COMPUTER MONGREL

Once you've sourced such a program (these are generally available from ST PD libraries, although I used the GETTOS.PRG program that came with the Medusa emulator), all you have to do is to copy the resulting TOS.IMG file onto the supplied ST disk. Once this is done, you're ready to get your first taste of Tramiel computing on the Amiga.

All that now remains is to turn on your Amiga, insert the program disk into the internal drive and *Chamäleon* then starts to boot. Once you're past the fancy loading graphics, *Chamäleon* then asks you to insert the Atari-format disk containing the TOS.IMG file. If everything is OK, *Chamäleon* then reads this file into memory. From here, you can then choose the resolution which your hybrid ST is to work in – all three ST resolutions run on a standard Amiga monitor, so just hit the corresponding function key and you'll be presented with the ST desktop.

You now have a machine which is, to all intents and purposes, an Atari ST. Just insert any Atari-format disk, double click on the appropriate drive icon and *Chamäleon* brings up a window displaying the disk's contents. Most programs seemed to work without problems – I tried the ST versions of *DPaint, Calamus, GFA BASIC 3.5, Protext 5* etc, all of which seemed to work without problems. Even MIDI software such as *Pro-24* ran, which is great news if you're an Amiga musician. Just think, at last Amiga owners can run software such as Steinberg's state-of-the-art *Cubase* sequencer. Oh what joy!

Some programs don't work unmodified, however. Also on the Atari-format diskette are a number of patch programs that fix certain well-known programs to work with *Chamäleon.* These include programs such as *GFA-BASIC, Signum Script!,* etc. Just click on the appropriate patcher program and the application is automatically fixed. Obviously it goes without saying that you should only feed back-up copies of your Atari software through these patcher programs, otherwise you could well end up with an Atari program that won't even work on a real Atari!

There are, of course, some programs that most definitely won't work under *Chamäleon.* For starters, Atari games won't work. Some PD games that don't 'bash the metal' might just run, but the general rule is that games are a non-starter. This isn't exactly suprising. After all, no matter how advanced the Amiga hardware, the fact is that it isn't an Atari. As the old saying goes, nothing runs Atari software better than an Atari.

JUST THE THING

So there we have it, an ST emulator at a realistic price. It certainly works – for people that want to run serious ST software without having to fork out for a second machine, then it could well be just the thing. Indeed, there are really only two things I don't like about *Chamäleon.* The first is that Maxon hasn't included a utility to rip TOS from an ST. Secondly, the *Chamäleon* boot disk uses a special disk format that basically means that it can't be installed on a hard disk.This could make it somewhat less useful for professional users.

Gripes aside though, *Chamäleon* is an impressive achievement in software design. It's highly compatible, fast and above all, relatively cheap. If you already own an Amiga and yearn to get a taste of what the other side is up to, then *Chamäleon* is the answer. All in all, *Chamäleon* comes highly recommended.

Chamäleon is available for £80 from George Thomson Services on 0770 82234. It works on all Amigas including the A1000 and A3000. ■

ADVANTAGES & DRAWBACKS

Very good value for money. Supports all three screen modes on a single monitor. Highly compatible.

Does not include a utility to extract TOS from a real ST, and it won't let you run ST games.

THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created … affordability.

Silica Systems are pleased to present the new Atari ABC. The ABC is a 286 AT compatible that runs at over 5 times the performance of the IBM XT. This is achieved by combining the power and speed of a 16-bit 286 processor, with Atari Corp's development experience and engineering capabilities, which use the very latest in design technology. However, the Atari ABC's are available at 'XT prices' and many XT owners will wonder why they paid more, but got less!

The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state of the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance (8 hour response), you can rest assured that your ABC will be fully supported.

The ABC is the latest addition to a comprehensive range of both 286 (8Mhz or 12Mhz) and 386 (16Mhz and 20Mhz) PC's, from the Business Systems Division of Atari Corp. Atari's PC range offers an unsurpassed combination of reliability, compatibility and expandability, with unique features like Atari's 44Mb removable hard disk on their PC4. Return the coupon NOW for further details of the complete range of PC products from Atari's Business Systems Division.

ABC TURBO
AVAILABLE: JUNE 90

To put the ABC even further ahead of the competition, we have introduced a special 'Turbo' version, which includes a super fast RLL hard disk controller to increase the data transfer rate from 150KBytes/s to 800KBytes/s, with a performance index of 4.801. Plus! to provide exceptional graphics with an outstanding colour resolution of up to 1024×768, we have included a Super VGA graphics adaptor and a 14″ VGA colour monitor (which also supports 1024×768 resolution), all for an additional price of only £300. Check the ABC Turbo against the competition, at only £1299 (+VAT) with 30Mb hard disk, Super VGA colour graphics capabilities, plus 12 months on-site maintenance, it offers unbeatable value.

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- Fully OS/2 compatible (requires 4Mb RAM)
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286 AT

WITH 30Mb HARD DISK & EGA MONITOR - £899

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SHOWROOMS: Demonstration and training facilities at our London & Sidcup branches.
THE FULL STOCK RANGE: All of your Atari PC requirements from one supplier.
FREE CATALOGUES: Will be mailed to you with offers and software/peripheral details.
PAYMENT: Cash / cheque / credit card / credit - we are licensed credit brokers - details on request.

Before you decide when to buy your new Atari ABC, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your ABC, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new ABC products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service".

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If you think for one minute that you're going to hear a bunch of dead parrot jokes, the word Ni!, lumberjack songs, nudge-nudge, a nod's as good as a wink to a blind bat, know what I mean squire? Or cheese shop sketches you could well be correct.

Express, in the company of Virgin Software, (which brought the game of the series to the computers of the non serious) are giving you the chance to win 6 Monty Python videos. That's 6 winners. The vids contain many of the wacky, zany, 60's and 70's gags, sketches, surrealities and such like sock-it-to-'em rib rippers which made the Python team so well loved and, well frankly, wealthy.

There are also 10 runners-up prizes of badges and posters to be won by those of you lucky enough. All you have to do is answer the following three questions to the best of your ability. We don't care if you cheat by looking them up. What we do care about is that you buy the magazine. Also to make my life (I'm the compo creep from the cupboard by the way, very humble to meet you) easier would you please send all answers on the back of sealed envelopes or preferably a postcard. Thanks muchly-loads.

All entries should be at this office no later than Monday 17 December 1990. Cheers then, and here we go with the questions.

1) Who wrote the Monty Python theme tune?

A) Sousa
B) Siouxie Sue
C) A boy named Sue
D) Andrew Lloyd-Webber

2) Who was the animator who worked for the Pythons?

A) Terry Griffiths
B) Trevor Gilliam
C) Terry Gilliam
D) Trevor Brooking

3) Which government department did John Cleese work for?

A) The Ministry of Defence
B) The Ministry of Silly Walks
C) The Press Office
D) The Ministry of the Environment

There you go then. All done my old chinas. Simply fill in the form below and send it off to us here at 'The Warm and Wet Comp' New Computer Express, 30 Monmouth Street, Bath, Avon, BA1 2BW.

Name..

Address..

....

The answers are: 1) 2) 3)

Supplementary question in the event of a tie breaker:

Margaret Thatcher will make a sensational comeback in which year

....*(no later than 1991 please)*

WINNERS!

**The winner of the the monthly competion for the Panasonic laser printer was...
LB Webb of Coventry. Well done.**

**At long last we can announce the winners of the *Dpaint* competition. So here goes....
Andrew Cassidy, Swindon, Wilts; Henry S Suppiah, Milton Keynes; PA Monks, Armingborough; M Westall, Poole, Dorest; Marcus Lauder, Forfar, Angus; Andy Stevens, Oxford; PP Patay, Oxted, Surrey; David Rhodes, Pudsey, W Yorks; Bill Brouard, Freshford, Bath; Steve Baker, Barwell, Liecs**

**HOLD ON A SECOND! We've also got the Spectravideo joystick winners to announce.....
R Bullock, Deepcar, Sheffield; Dave Brown, North Shields, Tyne and Wear; DRP Ferriday, Cleveland Richard MacLennan, Edinburgh; SA Sherriff, Co Antrim, Northern Ireland; JA Smith, Huddersfield; Robin Smith, Halifax, West Yorks; M Philpotts, Harold Park, Romford Katy Rayner, East India Dock Rd, London; MF Welding, Hinckley, Leics; Leonie Alpin, Ashford, Kent; Bruce Stewart, Dundee; M Lloyd, Soton; John Swire, Pershore, Worcs; R Fitchie, Edinburgh; Graham Greenwood, Newcastle-upon-Tyne; Mark Krason, London, W4; Tony Beedham, March, Cambs; R Daley, Canford Heath, Poole; Gavin Upsall, Sleaford, Lincs**

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Commodore AMIGA 500
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ocean
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The Commodore A500 Batman Pack must surely rank as one of the most popular computer packs ever! The pack features the **Commodore Amiga 500 computer** with **mouse controller** and **TV modulator**, plus four top software titles. The software includes: **'Batman The Movie'** - Rid Gotham City of the cunning joker, in Ocean's top selling title based on the blockbuster Batman film; **New Zealand Story** - high quality conversion of the leading arcade game; **Interceptor** - Dogfight with two F-16's in this leading flight simulator; **Deluxe Paint II** - top quality Amiga graphics package which set the standard for others to follow. Return the coupon for further details.

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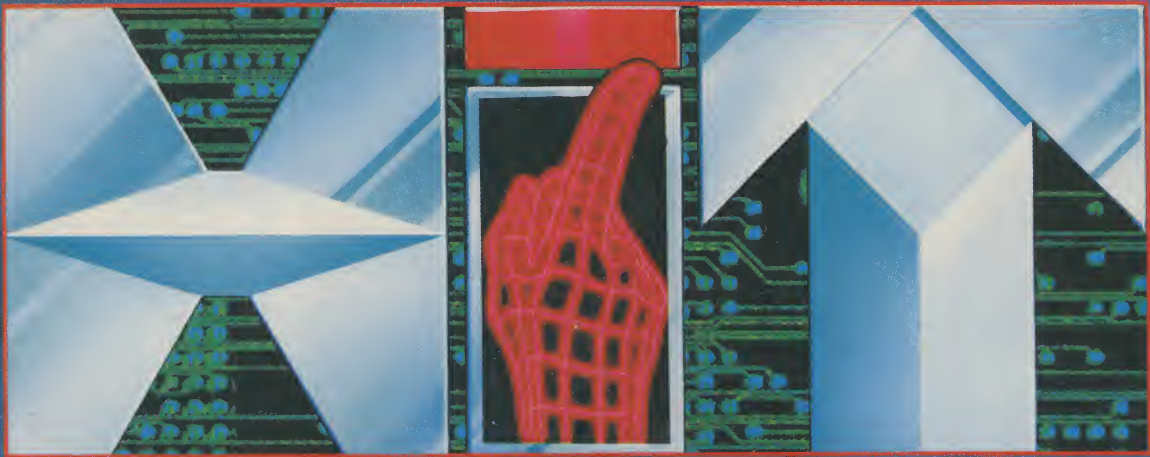

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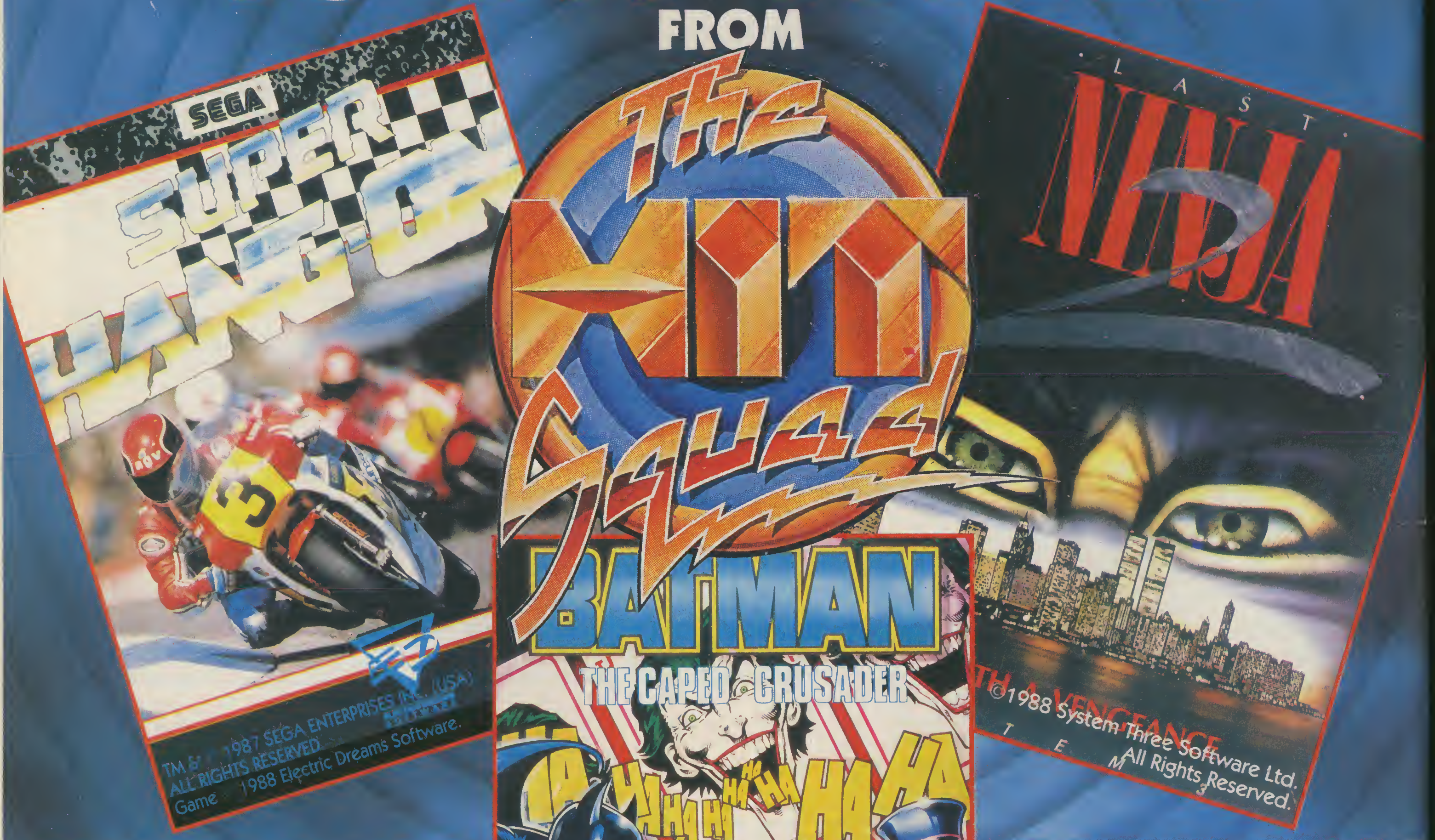
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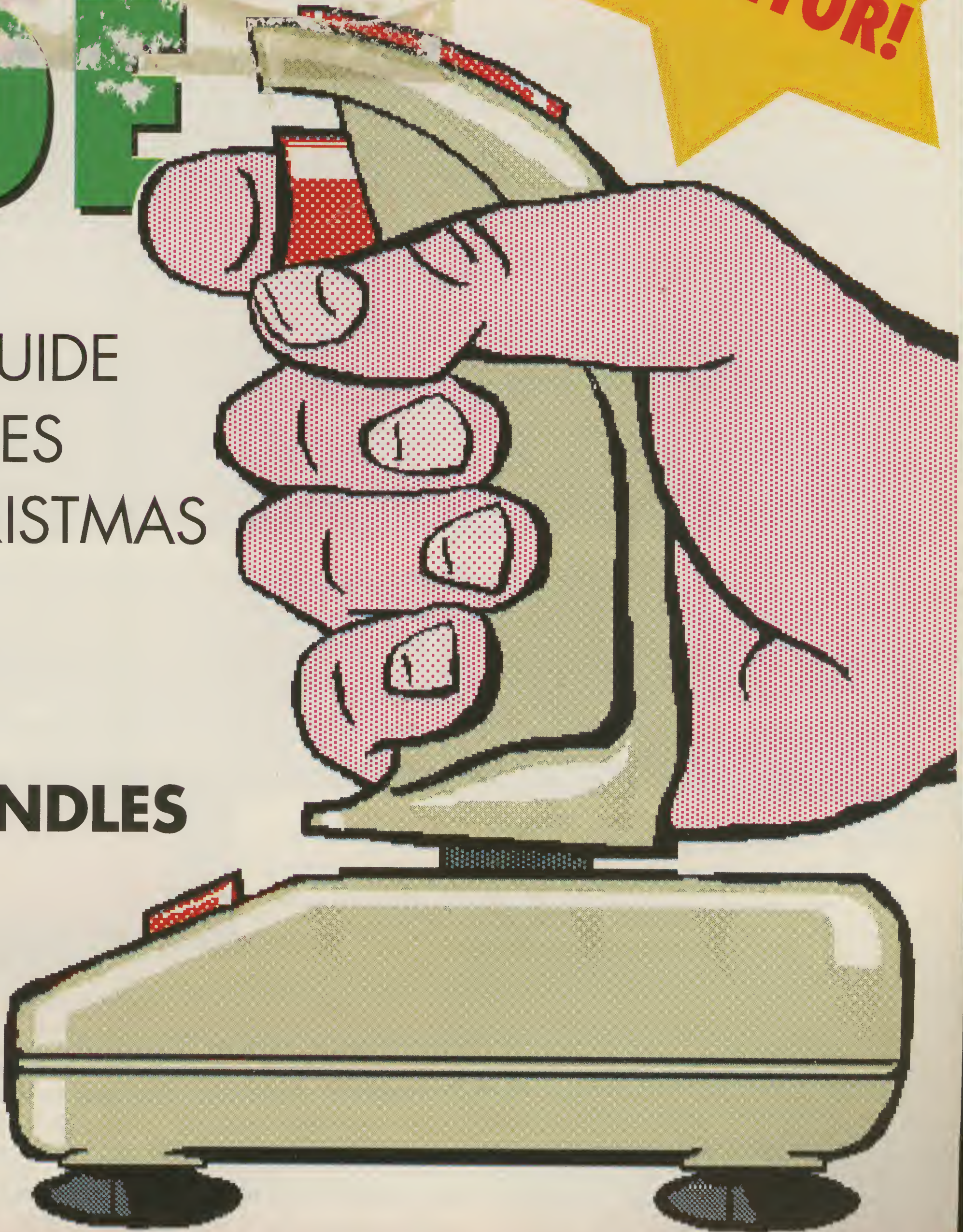

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Welcome to the very first *New Computer Express* supplement. We know that choosing new computer – especially a first computer – can be a taxing business.

With that in mind we've put together a comprehensive guide to the options available this Christmas for entertainment hardware. Both consoles and fully-fledged computers are covered, and inside you'll find the pros and cons of all of them, and what you get for your money spelt out in clear comparison charts.

When you get the machine home you will probably find some advice helpful, so our tips and cheats section shows you the way to defeat the baddies in several of this year's hit games. And to play games properly you'll need a decent controller, so check out our joysticks guide.

Read on, make your choice and have a merry Christmas with your new computer.

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Bundles of fun

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If in doubt, cheat

Be sure to get the Christmas day high score with our tips and cheats for the top games included with the bundles
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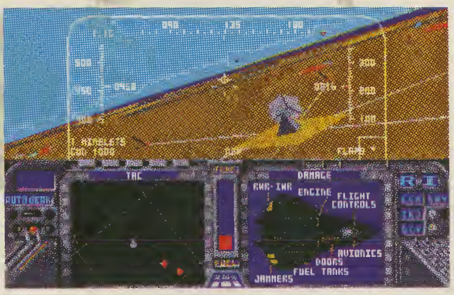
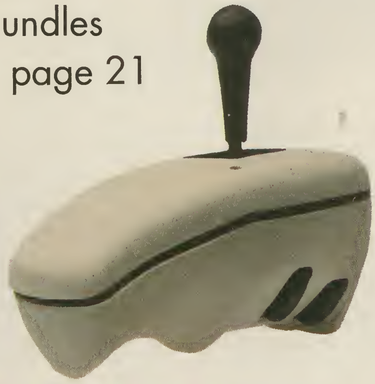




Don't blame your tools

To get the best from a game you need a decent joystick. We name the top brands
– page 26

Colours on screen, colours off

You need a monitor to really see your games in all their colourful glory, and here's your chance to win the most colourful monitor around from Philips
– page 29

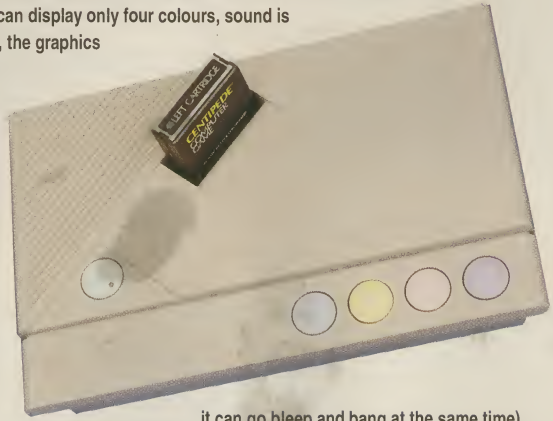
Who's the king of the consoles?

If you only want to play games, why bother with a computer? A dedicated console can provide all the alien bashing you need for a fraction of the price. Here's the Express guide to the best of the consoles...

Atari 2600
£50

This is an ancient piece of technology which, to be honest, hardly bears comparison with the other machines. It can display only four colours, sound is glorious mono single-voice, the graphics resolution is lower than the hand-held Gameboy's – to sum up, its, er, not very good.

It is cheap, but it has to be worth taking on the extra paper round to get hold of a Nintendo or Sega for another £30.



Atari 7800
£75

This is the 2600's big brother, featuring more colours, higher resolution graphics and two whole channels of sound (that's not stereo, it just means it can go bleep and bang at the same time).

It remains outdated and the games come nowhere near the quality of modern offerings. Best look elsewhere.

Amstrad GX4000
£99.99

Amstrad's entry into the consoles market is the British contender for the gaming prize. Backed with a heavy television advertising the GX4000 is bound to be a hit, and with good reason.

Inside the GX4000 is a CPC, but with all the enhancements of the new models. That means 32 colours on screen from a palette of 4,096, good sound and hardware designed around the needs of games playing.

The machine comes with one game, the excellent driving outing *Burnin' Rubber*, and plenty of others areavailable at around £25 a time.

Burnin' Rubber

SNK Neo-Geo
£399.99

No that's not a misprint, it is that expensive. Worse still, the games are a three figure sum as well. But the Neo-Geo is an arcade machine in a tiny box. It offers silly numbers of colours, top-quality sound and extremely fast action. The games for the machine have a foreign feel to them (for instance the golf game features brown, scorched grass), but are just like the real thing. In fact often they are the real thing. You can even get a credit-card sized smartcard which lets you transfer your high scores from the arcade game to your home version!

In Japan the machines are mainly aimed at the rental market, but that hasn't really caught on over here yet. For the time being the Neo-Geo is for those with more money than they know what to do with.

NEC PC Engine
Around £150

Not officially available over here, the PC Engine is nevertheless a popular machine with 'grey' importers. There is nothing at all illegal about this, but don't expect the same sort of customer service you get with an official machine.

The PC Engine plays excellent games, especially good are the loud, brash and fast shoot-'em-ups, although all types of games are available. Supplies of games are limited to a few mail-order outlets, and they are expensive.

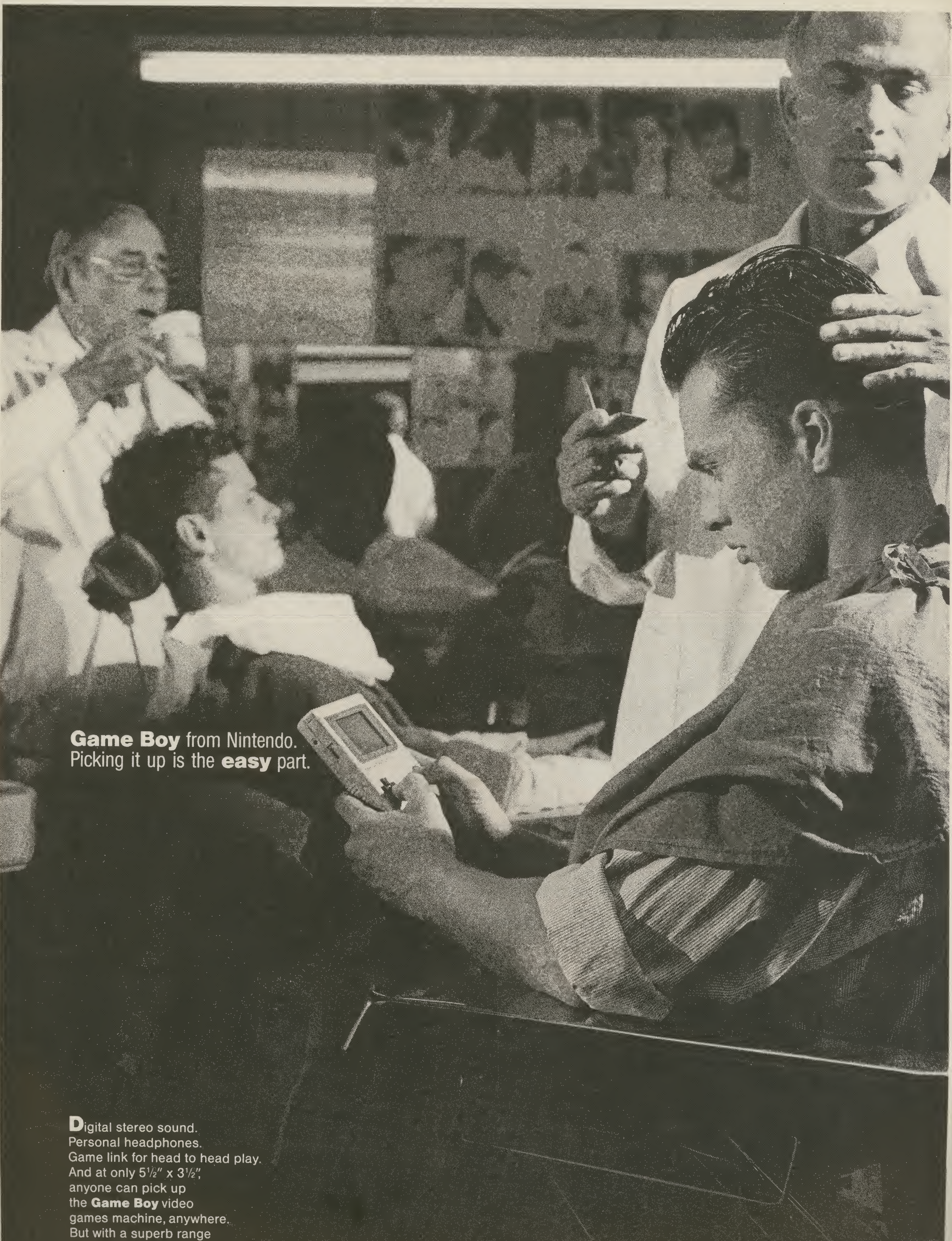
One point to be sure of when buying a PC Engine (indeed any grey import) is whether it will work with a British TV. PAL is the magic acronym to look for - US and Japanese models use NTSC instead, which won't work with our TVs.

Despite this the PC Engine is an excellent machine with great games.

Commodore GS
£99.99

Another new machine for this Christmas, the GS is a Commodore 64 without the keyboard. It comes with the best bundle of games of any console; *Fiendish Freddy's Big Top o' Fun, Klax, Flimbo's Quest* and *International Soccer*. That's quite enough to keep you going through the holiday period. After that, the machine is bound to be well supported with good games.

The only reservation about this machine (besides it's drab styling) is whether its worth paying the extra for a fully-fledged C64, which will run the same cartridge games as well as cheap cassette offerings and more serious software.



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COLOUR HAND-HELDS

In the last few weeks the colour hand-held arena has seen plenty of action. Originally only inhabited by Atari's superb Lynx, Sega pitched in with the GameGear and now NEC has a portable PC Engine.

All these devices use the tiny colour screen featured in the Sony Watchman and the other pocket TVs, and all are great for a train journey. But don't expect the playability of a real console. The screen is too small and being a liquid crystal it is slightly blurry when it comes to fast movement.

For a full analysis of the Sega and NEC machines, see this week's *Express*.

NEC
TurboExpress
TURBO GRAFX
Select
Run

GAME GEAR
SEGA
START

BLACK AND WHITE HAND-HELDS

There have been single-game hand-held consoles around for ages, but the hand-held first became a desirable object with the Nintendo Gameboy. The Gameboy uses plug-in cartridges and is tiny, fitting comfortably in your pocket. Its screen is small and black and white, but it is sharp and clear. Games like the bundled *Tetris* are highly playable and the stereo sound can be fed through headphones to save annoying everyone else.

The Gameboy is shortly to have competition in the form of the Game Mate from Cheetah, the joystick people. Unfortunately details were sketchy as we went to press, but it is expected to cost the same as the Gameboy.

Nintendo GAME BOY™

Sega Master System
£79.99
Sega Master System Plus
£99.99

The Sega is emerging as the leading console in Britain. It is being supported by many top software companies, providing it with excellent games, and it is the only console to have its own magazine (plug for *Sega Power* ends).

Despite its 8-bit technology, in essence similar to the Spectrum, the games are colourful and intensely playable. They are also relatively cheap for console games.

The difference between the two packs is entirely in the bundled games. The straight Master System comes with *Alex Kidd in Miracle World*, while the Plus version features *Hang On* and *Safari Hunt*. All are good games, with *Alex Kidd* having the edge.

SEGA MASTER SYSTEM Power
LIGHT PHASER
SEGA

Sega Megadrive
£189.99

The Megadrive is the first of the next generation of 16-bit consoles to arrive officially in Britain. With its advanced technology the games on the Megadrive are exceptional. Undoubtedly the Megadrive is the console to have this Christmas. With its 64 colours and stereo 12-voice sound it's the best looking and best sounding of the affordable games machines.

There are plenty of games about, but make sure that you get the correct versions - UK machines will not run many grey imported games. None of them are cheap - £35 is the bottom marker.

The Megadrive comes with the superb *Altered Beast* included free.

Nintendo Entertainment System
£79.99

Well they had to sneak their way in somewhere – the Nintendo ES features the teenage Mutant Ninja Turtles. Despite that, the console is excellent value for money.

Although no longer leading-edge technology, this console has been the best selling machine in America for some time, so it is well kitted out with add-ons such as light guns and even virtual reality devices like the Powerglove, which lets you 'reach in' to the screen.

As it stands, this is a bargain.

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OFF
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RESTART
FLIP
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LYNX
Zarlor Mercenary
LYNX
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LYNX
Rampage
LYNX
Robo Squash

ATARI®

GAMES CONSOLES GUIDE

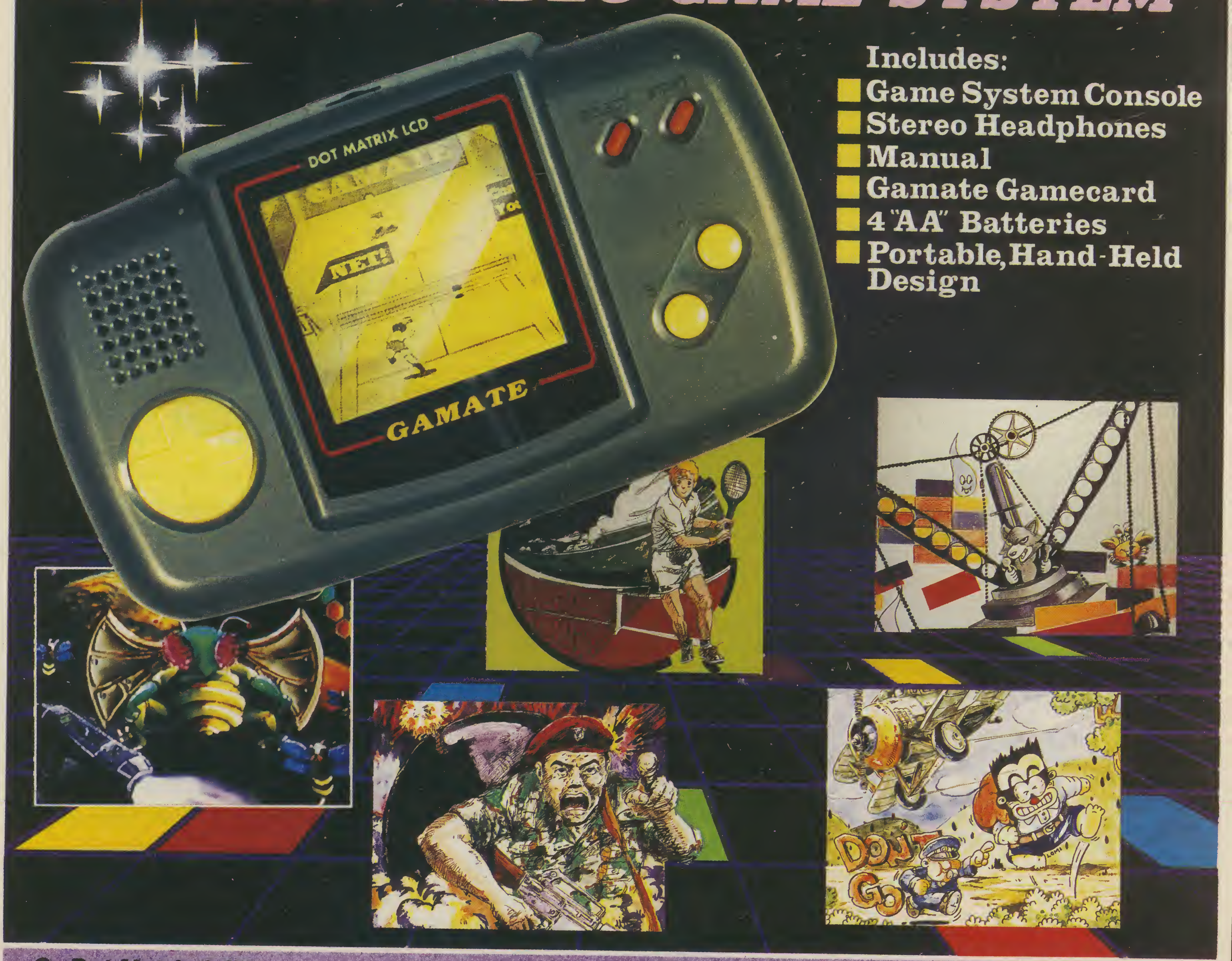
Maker	Console	Games included	Chip	Colours	Price
Amstrad	GX4000	Burnin' Rubber	8-bit Z80	32	£99.99
Atari	2600	None	8-bit	4	£50
Atari	7800	None	8-bit 6502	16	£75
Commodore	GS	Fiendish Freddy's Big Top o' Fun, Klax, Flimbo's Quest, International Soccer	8-bit 6502	16	£99.99
NEC	PC Engine	One game, title varies	8-bit Z80	32	£150
Nintendo	Entertainment System	Teenage Mutant Hero Turtles	8-bit	16	£79.99
Sega	Master System	Alex Kidd in Miracle World	8-bit Z80	16	£79.99
Sega	Master System Plus	Hang On, Safari Hunt	8-bit Z80	16	£99.99
Sega	Megadrive	Altered Beast	16-bit 68000	64	£189.99
SNK	Neo-Geo	None	16-bit 68000	65,536	£399.99

HAND-HELD GAMING GUIDE

Maker	Console	Games included	Chip	Colours	Price
Sega	GameGear	Various titles	8-bit	16	£180
Atari	Lynx	California Games	8-bit	16	£179.99
Nintendo	Gameboy	Tetris	8-bit	Black and white	£69.99
Cheetah	Game Mate	Not known at press time	8-bit	Black and white	£69.99
NEC	PC Engine	Not known	16-bit	512	Around £200

GAMATE

COMPACT VIDEO GAME SYSTEM



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BEST BUY BUNDLES

There are so many computers to choose from, all claiming to be the best, that picking up a Christmas bargain can be a nightmare. To aid your decision we present the no-nonsense Express guide to the games machines on offer, helped by local schoolboy Chris Jones...

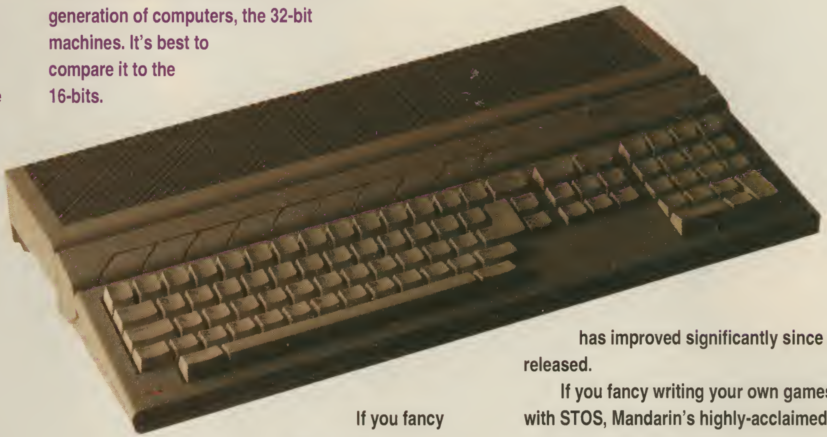
FULL DETAILS OF ALL THE BUNDLES ARE ON PAGE 16

Computers fall into two broad categories, 8-bit and 16-bit. These were originally technical terms referring to the width of the machine's internal data handling bus (!), but have become a sort of shorthand for a kind of computer.

8-bit means 'old', 'slow' and 'not very colourful'. 8-bit machines have limited memory (a problem for word processing and other serious uses) and often have cassettes rather than disk drives for storage. (Cassettes are too slow to use for anything other than games). Add ons for 8-bits are usually rare, and often have a home-made, cobbled-together feel to them. The other adjective that applies to 8-bits however is 'cheap'. The most affordable computers are the 8-bits, and they offer excellent value for money.

16-bits on the other hand are faster and more powerful than 8-bits. They come with much more memory and they all have a disk drive. 16-bits have sharper, more colourful graphics and often have a sound system which can handle effects and music well. Because of this 16-bit games are much more glamourous than their 8-bit cousins. That doesn't necessarily make them better games, only better looking!

Out on its own at the moment is the Acorn Archimedes, which belongs to the next generation of computers, the 32-bit machines. It's best to compare it to the 16-bits.



Atari STFM Discovery Pack

£299.99

The Discovery Pack is the cheapest 16-bit machine you can buy. At its heart is the 512STFM – that's the old machine which lacks the enhancements of the later STE model. Hardware wise it has a 720K floppy disk drive and 512K of memory. You can easily add another disk or some more memory, with dozens of suppliers offering the upgrades.

The ST is extremely well blessed with software. Almost every game that is released has an ST version, but there is a problem with ST games – they cost a fortune. Be prepared to pay £25 for a new release game and £10-15 for a 'budget' title. The quality of the games is good, let down only by the STFM's poor sound chip.

If you fancy getting down to a more productive use of the machine, you'll find plenty of 'serious' software for the ST – the desktop publishing package *Calamus*, for example, is reckoned to be the best DTP outside of the Macintosh. Be warned though that to make the best of the more sombre applications you'll need to upgrade the hardware.

The Discovery Pack comes with a fistful of old, but good, games – the eight-year-old arcade game *Bomb Jack,* the classic *Carrier Command,* the racing game *Out Run* and interstellar action with *Space Harrier.* They will keep you entertained over Christmas but the standard of games has improved significantly since these were first released.

If you fancy writing your own games the pack comes with STOS, Mandarin's highly-acclaimed version of BASIC which features extra games oriented commands to make shoot-'em-up writing easier.

Chris's Comment:

"The sound's dreadful and you've only got 16 colours so the graphics aren't that hot either. I liked the games in this pack, but they're not as good as some of the ones I've seen. You certainly wouldn't get your mates round to play them. STOS is great though, maybe I could make my fortune by writing *Xenon 3...*"

Atari STE Turbo Pack

£399.99

The Turbo Pack features the new all-singing all-dancing ST model, the 520STE. The STE has better graphics (more colours on screen), better sound (a proper sound chip) and a pokier bit of silicon (a blitter as standard) than the older STFM.

Unfortunately very few games yet support these new features and instead cater for the much larger STFM market. But you do have the whole range of STFM games to choose from for now (last year's incompatibility problems have been well and truly solved), and before long the number of STEs out there will make it worth while for developers to produce games which make the best of the hardware.

Meanwhile the Turbo Pack contains an excellent selection of games. As well a couple of golden oldies – *Out Run* and *Super Cycle* – there is a selection of truly excellent modern games. *Blood Money, Dragons Breath, Human Killing Machine* and *Indiana Jones and the Last Crusade* are reckoned to be among the top games in their categories. *Anarchy* and *Impossible Mission* are good too. And you get STOS.

ATARI
520ST
Turbo

If you're getting the idea that its worth paying the extra £100 for the Turbo Pack, then you're dead right – there's easily more than £100-worth of extras thrown in plus you get the better machine. Whether the Turbo Pack beats the Amiga though...

Chris's Comment:

"Now these are real games! *Blood Money* is my favourite, I reckon it's even better than *Xenon II*! *Indy* is one of the best adventures around too. I must say though, I couldn't really tell the difference between the STFM and the STE"

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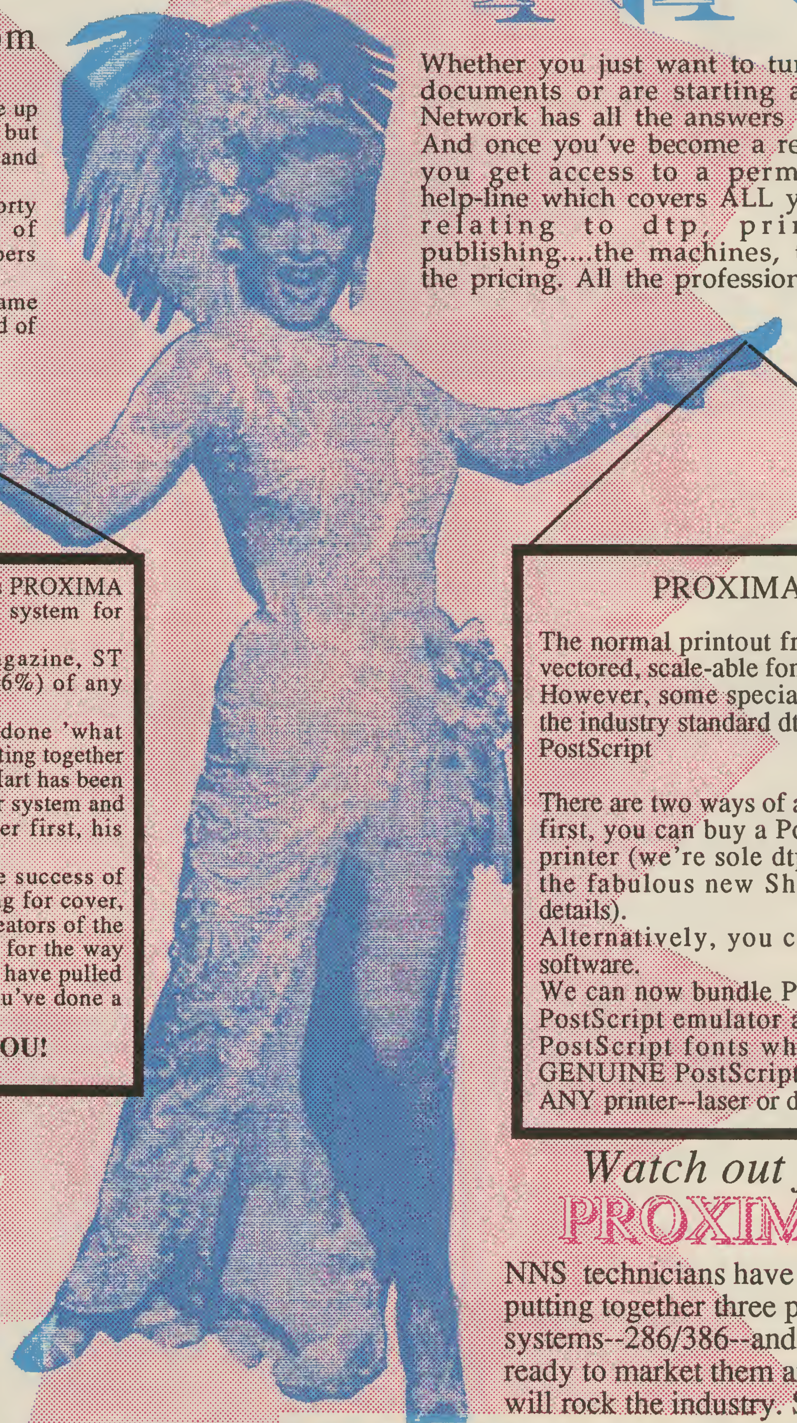

IN THE PAST 18 MONTHS, Network's PROXIMA package has become the highest-profile system for the Atari ST

Britain's best-selling serious ST magazine, ST Format, gave it the highest marks (96%) of any serious software they had ever reviewed.

New Computer Express said we had done 'what everyone thought was impossible' in putting together such a fine package. Micro Computer Mart has been awash with correspondence praising our system and way of working. We put the customer first, his wallet second and ourselves third.

In May and July of this year, after the success of PROXIMA was sending rivals scurrying for cover, Soft Logik of the USA, the original creators of the software we market, praised us warmly for the way we'd marketed the program, "You guys have pulled us out of a hole. The feeling here is you've done a good job with Proxima."

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An important new project

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ZX Spectrum +2
JAMES BOND
007
ACTION PACK

A few months back Amstrad killed off the Spectrum Plus 2's big brother, the Plus 3, which has left a big question mark over this old stalwart's future. For the time being though, Amstrad can't build enough of the things. There are literally millions of Spectrums out there.

This is the machine's big advantage – as it has a huge user base it has a huge amount of games software. And it's dirt cheap. £1.99 or £2.99 is standard for Speccy software.

Unfortunately the Spectrum is really showing its age. It has a graphic display which looks quite hideous compared to any other machine, and its sound is dreadful. Games do not look pretty by any means and the best examples are puzzle and strategy games which don't demand slick graphics and fast action to be playable.

The 007 Action Pack bundle is a generous one. You get six games including the acclaimed *Licence to Kill*, and so you can pretend to be James Bond properly Amstrad include a light gun which you fire at the screen instead of using a joystick.

The Spectrum will sell this year for the very good reason – that it is the cheapest computer you can buy. Nevertheless if your budget can stretch the extra few quid to a C64 or even an ST it would be money well spent.

Chris's Comment:
"Er, thanks but no thanks. I wouldn't be seen dead with one of these – my friends have Amigas and STs you know! The light gun's a good idea though, more computers should have them."

SAM Coupé £199.95

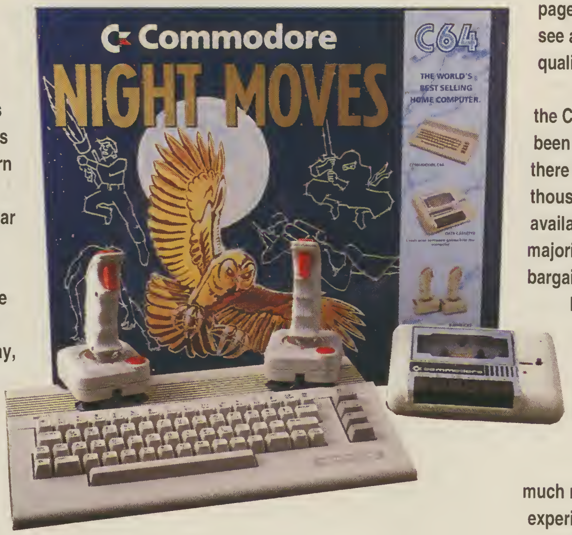
The ill-fated SAM Coupé was supposed to be the big new computer of last Christmas, but unfortunately the manufacturer didn't deliver them on time and paid the penalty – it is now in the hands of the receiver. But you can still buy the SAM through a spin-off company, so is it worth it?

From the gamers' point of view the answer has to be no. Although it is a superior machine when it comes to hardware, it simply has hardly any games which will run on it. There are a couple of SAM-specific games if you look hard (Enigma Variations is doggedly sticking with the machine) but most of them are Speccy games running under an emulator. As Speccy games are, well, not good the future looks bleak.

If you want a computer to fiddle around with machine code programming and suchlike you might find the SAM is a bargain. Otherwise steer well clear of this well intentioned machine.

Chris's Comment:
"Bit of a shame really, it looks really good on paper but it just doesn't cut it reality. Still, if it's that or the Spectrum..."

Commodore C64 Nightmoves £159.99 Mindbenders £159.99



The Commodore 64 goes back a long, long way. It's not in any sense a modern computer, although the case was restyled last year to make it a little more Nineties-friendly.

That said, it's not the least powerful computer you can buy by a long way, and the recent launch of a games-only console which can use the same cartridge games as the C64 (see Who's the King of the Consoles?, page 4) should see a resurgence in quality software.

Software is where the C64 really scores. It's been around so long that there are literally thousands of games available for it, the vast majority costing only a bargain £2 or £3.

It's a cassette-based machine, but you can add a disk drive which makes gaming a much more pleasant experience.

Many claim that the games with the best playability and addictiveness are to be found on the C64, and all the major titles have a C64 version. On the more serious side the machine benefits enormously from its popularity in the States, where it has always been seen as a capable machine for non games work. It's available in two different bundles this year. Mindbenders consists of strategy and puzzle games presumably designed to appeal to parents who disapprove of their offspring killing things all the time. More permissive parents can choose the Night Moves pack, featuring *Nightbreed* and *Shadow Warriors* among others.

The C64 is well worth considering if you want a reliable, versatile computer but the budget is tight.

Chris's Comment:
"The games on this one are surprisingly good, considering its such an ancient machine. The sound's none too hot, but the graphics are OK and the games are really cheap."

Acorn Archimedes A3000 Jet Set
£749.99

The Acorn Archimedes (strictly called the BBC A3000, but everyone calls it the Archimedes) is the most highly technically developed personal computer.

It contains a 32-bit RISC processor – never mind what that means technically, in practical terms it's blindingly fast, beating the rest out of sight when it comes to straight computing power.

The big criticism of the Archimedes is the lack of software (it's a very new machine, the A3000 has only been available a couple of years). While this problem is fading when it comes to serious software, games are still lagging a long way behind.

Zarch and *Conqueror* were two attempts to show the way, but the mass of games companies have still not taken on the Archimedes as a viable proposition. The only developers are those who used to work on the old BBC micro, and most of their efforts reveal the programmers' 8-bit origins.

The Jet Set bundle contains the exception which proves the rule – the flight simulator *Interdictor.* It's a shame the more recent *Interdictor 2* wasn't included instead.

The Archimedes is *the* educational computer, but if you are after a games machine, leave well alone.

Chris's Comment:
"We've got a couple of Archies at school, and they can certainly burn off an Amiga. But the games are crap (can I say that in this mag?)"

Amstrad CPC 464 Plus
£330
CPC 6128 Plus
£430

The CPC was Amstrad's first computer, and Future Publishing (*Express*' publisher) was founded as a CPC magazine publisher, so we have a bit of a soft spot for the old dear.

Amstrad however is not so backward looking and has just completely redesigned the range, putting the machines in jazzy new boxes, adding a cartridge games port and improving the graphics and sound.

These changes have made the CPC Pluses the best 8-bit computers around. Cartridge games will make a real showing in the next few months because of the new GX4000 console which also takes them. These cartridges stretch the CPC's graphics and sound to the limit, and there are those who prefer the CPC to the ST in those departments. And you try buying ST games for £1.99!

There are two varieties of CPC, the 464 which is cassette based, and the 6128 which has a disk drive. Uniquely in this survey both come with a monitor included – colour or black and white models are available but the colour is really needed for games and that's the price we've quoted.

464
PLUS
HOME COMPUTER
SYSTEM
AMSTRAD

Only one game is included – *Burnin' Rubber*, a racing game. The CPC uses the currently trendy joypads in place of the more conventional stick, but you can replace them if you wish.

With its built-in storage and monitor, the CPC really should be compared to the 16-bit machines. If you add the price of a colour monitor (around £200) to the ST and Amiga prices you will see just how good value the CPC is.

Chris's Comment:
"Is this thing trying to look like an Amiga or what? Still I've got to admit that you wouldn't know it was an 8-bit machine to look at the graphics. The monitor's miles better than a telly too."

Commodore Amiga Screen Gems
£399.99

At the risk of offending everyone, there is little doubly that the Amiga is the best games machine.

You can argue all you like about the relative merits of the various machines' hardware and serious software, but the Amiga stands head and shoulders above the rest when it comes to games.

Commodore
SCREEN GEMS
AMIGA
500

Most of that is due to its specially designed chips which handle graphics and sound. They make it easy to use plenty of colours in a game without slowing it down, and let the Amiga handle digitised high-quality sound. These factors have combined to make the Amiga the 'sexiest' machine for games programmers, and where the programmers go, there too go the games.

An increasing number of games are Amiga-only, with versions for other machines being written off as impractical. Another trend is the 1Mb game – to make best use of the Amiga's graphics and sound you need a lot of memory, so budget for a memory expansion card (£30-£50) to bring the machine up to the latest spec for top-quality games.

The main problem with the Amiga is that it is too good – a single disk, 512K machine run through the TV doesn't make the most of its potential. Monitors and extra disk drives are *de rigeur* for serious gaming. Add to that the £25-£30 cost of games and the Amiga does not come cheap.

Nevertheless the Amiga is the clear winner as the best games machine, especially when you consider the quality of the games in the Screen Gems bundle: titles like *Shadow of the Beast 2* and *Nightbreed* are still running high in the games charts.

Chris's Comment:
"Yes please, I want one. The graphics are excellent – check out *Shadow*! The sound is amazing (a mate of mine bought a sampler for his and put together some superb demos). And you can take the piss out off ST owners all day too!"

THE BOTTOM LINE

Buying a computer is a very personal decision, and your choice will depend on what exactly you want to use it for, how much money you have, what your favourite colour is and a dozen other factors. However, if it were our money we would plump for one of these three:

C64 NIGHTMOVES – Excellent games at an extremely reasonable price.

CPC 464 PLUS – Excellent value for money with a colour monitor and top quality cartridge games. The CPC wins the award for the best gaming 8-bit around.

AMIGA SCREEN GEMS – If you've got the cash, this is simply the best.

Check the table on page 16 for a detailed breakdown of the bundles on offer, with the games and other extras you can expect.

Remember you can often get better deals if you shop around – firms like Digicom frequently undercut the recommended retail price by a significant margin. Check out Shopping Express for the best prices around.

ATARI ST

"E" & "FM"

Turbo
Blood Money
Anarchy
Out Run
ATARI ST
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- ✓ Outrun
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KICK OFF 2

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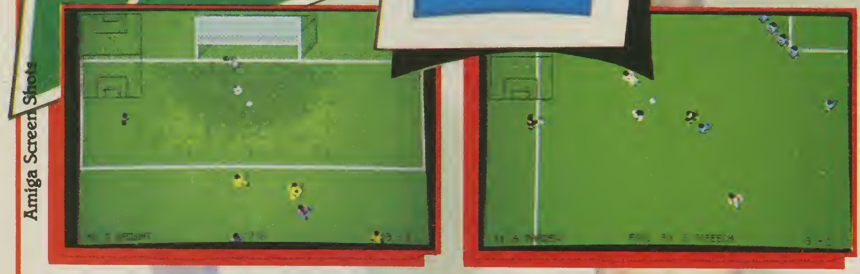

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- **Facility to load Player Manager teams and tactics for a single or league game.**
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ST ACTION - The best game ever to grace the ST. Highest accolade I can give.
AMIGA USER INT - The best computer game ever **97%**
THE ONE - Ultimate soccer simulation. **96%**
THE ACE - Brilliant. Buy, Buy, Buy. **930.**
AMIGA FORMAT - Best footy game to have appeared on any machine. **94%**
ST FORMAT - What a game! Gem to play. Magic. **90%**
C & VG - Championship winning material. **95%**
GAMES MACHINE - Probably the best sports game ever. **92%**
COMMODORE USER - No other footie game can touch it. **90%**
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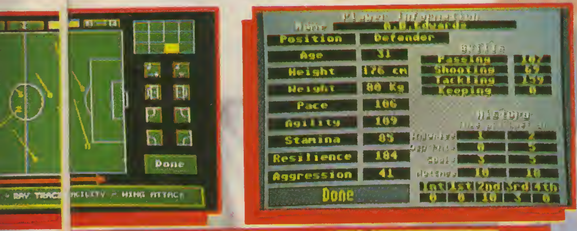

Position Defender
Age 31
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Agility 109
Stamina 85
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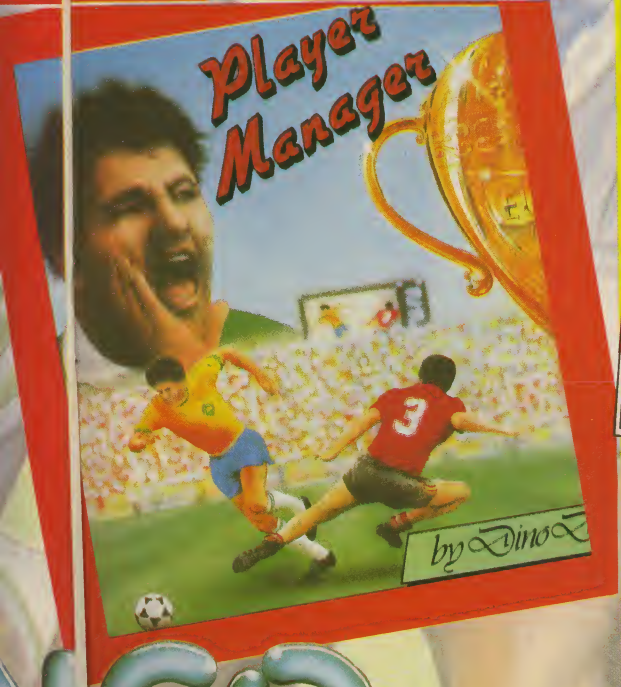
Aggression 41
Passing 107
Shooting 67
Tackling
Keeping 0



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STUCK ALREADY? HELP IS AT HAND

If you can't work out how to shift the end-of-level guardian don't despair; Mark Higham is at hand to help you out of that tight spot. And he'll be back in the new year with another batch of top tips and cheats.

CARRIER COMMAND

An exceptionally useful cheat mode, this one. Pause the action from the main screen and carefully type the words THE BEST IS YET TO BE remembering to include the spaces. The game bursts back into life and a message "CHEAT MODE ACTIVATED" appears on the screen.

Now pause the game and hit either + or – on the numeric keypad to toggle Manta invisibility on and off. Flying craft are no longer vulnerable to air attack although you can still be killed if you collide with large objects.

Once a course has been programmed for the Carrier, Mantas or Walruses engage autopilot and click on Pause. To avoid wandering around in real-time you now find that by pressing 3 on the numeric keypad and unpausing again takes the corresponding craft directly to its destination. Likewise, pausing and pressing 2 on the keypad replaces lost shielding. With this cheat mode active you also can hit the 1 key to refuel the currently active craft and the 9 key to display the current difficulty level.

Play around with the other keys and you might find a couple more hidden extras.

ALEX KIDD IN MIRACLE WORLD

Here is some useful advice for those of you still struggling to hack your way through *Miracle World* on the Sega .

MT KAVE: The pink boxes don't break. Just punch them and move on. To get telepathy you must fall down the hole and keep your control pad pressed to the right. The passageway now opens.

THE BLAKWOODS: Buy the Cane of Flight at the shop and use it in the middle of the woods. Take your time over the spikes.

TO KILL THE BEAR: Buy capsule A and Alex's friends beat him. You can also use the bracelet. After the forest you should buy the peticopter and beware of the lightning. Capsule B helps you if you lose the peticopter.

RADACTIAN CASTLE: When first entering the castle run on past the spikes, jump over the pink box and climb up the ladder to your right. You enter a room with a fireball and a bat. Climb to the top left of the screen and make your way up to the next room.

Punch out the frog and make your way to the right. Head to the upper right to get an extra life. Go back and fall to the second level of the previous room then go right.

Punch out the grey bricks located on your right and continue right. You then enter a room with 16 more grey bricks. Punch out the bottom bricks and climb the ladder on the right.

You're now faced with Alex's brother, Egle. Punch the pink boxes to set him free. Go back down the ladder. Go down one room and then move left into the next room.

Jump over the fireballs and make your way to the left where you enter a room with fireballs and six ladders. Take the top ladder on the right to get to the Personal Letters and then return. Go down to the bottom ladder on the left and follow it all the way down.

Punch out the scorpion and make your way to the right. Run past the falling spikes and continue to your right. Punch out the grey bricks and enter the next room.

Be careful with the fireballs: wait until the fireball is on the opposite side and then make your way to the left ladder and you're out. To defeat Gooseka choose Paper and the scissors. Watch out because his head flies out! Punch the head three times.

That's it for now, but come back in January for some more tips.

LICENCE TO KILL

Surprisingly good for a Bond game, this one. With five complex levels of action though, a little help wouldn't go amiss.

STAGE ONE

Pull down diagonally left and shoot the four gun emplacements. Now move to the bottom middle of the screen and shoot at Sanchez's jeep. When you've managed to pass the tall building on the right move right and shoot the gun. Stay at the back and shoot the second gun when you've passed the wall. Inch forward slightly and shoot the two guns which are next to each other, while dodging the wall. Go onto the road and fly forward. Stay on the road and dodge enemy fire, making sure you shoot at the jeep whenever it comes into sight. To avoid damage try to slow down when a gun is fired at you.

At the first crossroads move left, making sure to stay on the road, and fire your gun. Get back to the middle of the road quickly and head forward. At the second crossroads move left, staying on the road and shoot the two guns. Move back into the middle of the road and move to the top of the screen. Dodge enemy fire and pull back quick when you reach the end of the road.

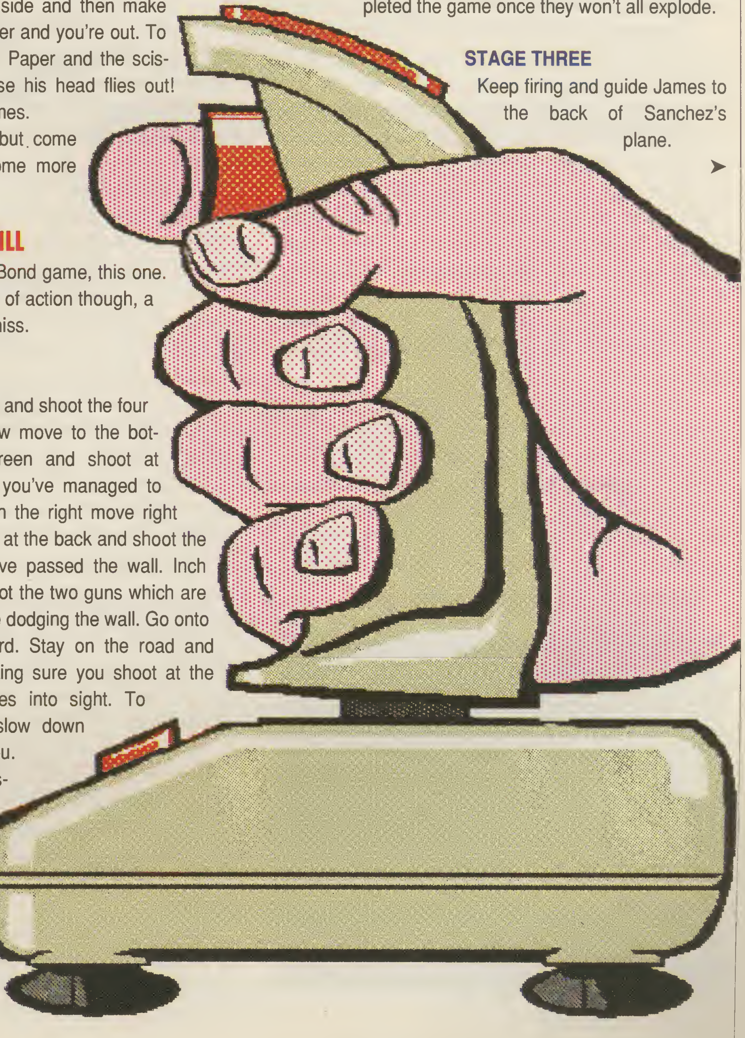
STAGE TWO

This stage changes every time you play it but the basic idea is to choose a man to shoot, get in a safe place, line your sights up at the correct angle to hit him then move forward and fire. Repeat this with every man but be careful not to waste ammunition. Pick up extra magazines whenever you can – they're essential. If you've still got three shots remaining then deliberately waste them so you can pick up the magazine. The enemy's shots come at you slowly so they're easy to dodge. Shoot the oil drums to blow up men. After you've completed the game once they won't all explode.

STAGE THREE

Keep firing and guide James to the back of Sanchez's plane.

➤



SHADOW OF THE BEAST II

Wonderful graphics, the best sound ever and some seriously challenging puzzles. What more could you want from a game? A bit of extra help perhaps.

When *Beast II* begins, head left. Make sure you watch out for the hands which throw crystal balls from the trees. Cross the bridge, making certain you judge the timing accurately to avoid the leaping fish. Now shoot the demon to save the man trapped in the field. Ask him about TRAPS and he tells you about either a higher or lower switch.

• **Shadow of the Beast:** ***seriously challenging.***

Now wander left, watching out for the bats. Land on the left ledge and duck to avoid the flying demon. Chase him to the right and kill him before he can cut the rope. Look at the man pushing the block and wait for him to get close to the edge before killing him. Go left, dodging the falling blocks and kill the demon on the hill to the left. Go back to the right and the demon has dropped a key. Go left again and drop off the edge, watching out for the flying demon.

Now climb the rope and head right. Use the key to open the door and proceed right, keeping an eye open for another falling block. When you eventually come to the switches, remember which one the man told you to activate and hit it. Now go up the lift and proceed right, dodging the bats again. Go past the chain which leads down and continue through two open doors to the next chain. Go up the chain into the alcove and collect the bonuses. Go back down the chain and continue right to collect the key. Go left and down the chain, being careful not to wake the sleeping guard. Use the key to release the beast free from its cage and hit the lower switch on the right. Now head all the way back to the lift and take it down.

The switch that you hit has caused a bridge to appear. Go left across it and use the three levers on the right to operate the claw. Pick up the rock with the claw, locate the spike in the floor positioned to the right and drop the rock onto it. Push the remaining smaller rock into the see-saw over to the right and climb the rope, jumping off to land on the other side of the see-saw. Run to the other lift and go up.

• ***Help at hand with*** **Shadow of the Beast.**

Go right to kill Ishran then free the prisoner who tells you a password. Go to the gateway to Barloom's domain and whisper the password. Go right to collect a bonus then up the rope to collect a parchment from Barloom. Leave and head past the rope. Watch out for the giants with maces and collect the bonus.

Wander into the hut and go right to collect the ale. Now leave the hut and return to the game's starting point. That's all you get for the time being folks. Just head right and remember you're still only half way through the game.

MIDNIGHT RESISTANCE

Here are some general tips for tackling all the levels in this classic scrolling shoot-'em-up:

The missiles are extremely intelligent so make certain you get your hands on them just before you reach those massive end-of-level aliens, particularly the jets.

The bullets fired fromZZ the giant tanks tend to spread out just before you reach them so wait until the last moment before jumping them.

Don't go mad with the ammunition. You only have a limited amount and you'll be in severe strife if you run out. It often pays to bump your ammunition right up when you run below 500.

Keep moving all the time. If you stop for a tea-break you get back to find your hero's on his last legs.

Try collecting the three-way weapon to tackle most the levels. If you drop it then make sure you collect another because other weapons just don't have the essential range.

For those particularly nasty monsters, try standing in one place and waiting for the enemy to fire before moving to a safe haven. In the early stages this isn't essential but by the time you reach the circular saws in level three you definitely need to adopt this strategy.

SPACE HARRIER

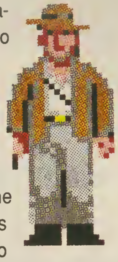
This is a devious little cheat which you shouldn't attempt unless you know what you're doing. If you're still playing the early levels and can get through to any of the later ones then follow this step-by-step guide to serious cheating:

1. First make sure the two game disks are write-protected then format yourself a brand new disk.
2. From the Desktop, copy the *Space Harrier* disk 2 (data disk) onto your newly-formatted disk.
3. Check that you can still run the game using disk one and your copy of disk 2. If the game refuses to load then copy disk 2 a second time.
4. Return to the Desktop and make sure your copy of disk 2 is in the drive. Now double-click on the disk icon to get a directory of the files on disk.
5. Towards the end of the listing there are several files with the name LEVELX.DAT where X corresponds to the level number from one to ten.
6. Delete the first few levels which you've already seen from the disk. Now rename the remaining levels consecutively, starting at 1 and then on to 2 etc.
7. With these changes made, switch off your ST and then switch back on again with game disk one in the drive. When requested, insert your copy of disk 2 in the drive and the higher levels should now have replaced the lower ones.

INDIANA JONES AND THE LAST CRUSADE

This brain teasing adventure was the best ever written by Lucasfilm. Besides boasting some truly tricky puzzles, it has great graphics and adheres very closely to the *Last Crusade* movie – not a claim too many games could make.

When the game begins you must head straight for Indy's office where you can search through the rubbish on his desk to reveal the Grail Diary. Leave the room via the window and you're taken to see Walter Donovan. Provided you get the translation correct you can proceed onto Henry's house.



Now head for the pot next to the door. Pick it up along with the table cloth and lo and behold a chest is revealed! Now pull the top bookcase located in the opposite corner of the room and pick up the sticky tape (this is hard to spot so look carefully). Go through to the bedroom and collect the painting from the wall – you need this when you reach Castle Brunwald later in the game. Now go to your office and locate the solvent in a jar on the shelves at the back. Use the solvent with the sticky tape. This gives you a small key which you must take back to Henry's house and use on the chest you uncovered earlier. It opens revealing the fake Grail diary which you need when you reach Castle Brunwald.

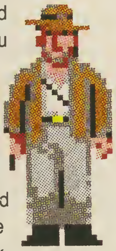
Leave for Venice and when you arrive at your destination you're taken to the library. There are three books you can pick up while you're in the library:

1. How to Fly a Biplane. At the library entrance go down and left to the shelves then head to the left end of the shelves, second row up near the middle of the shelf.

2. Mein Kampf. Go left from the main library entrance, taking the lower of the two possible routes to the second set of bookshelves. Mein Kampf is the only leaning book in the right hand end of the bookcase.

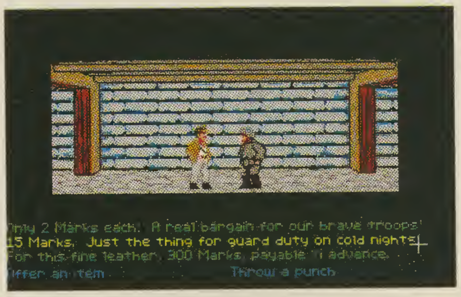
3. Historical Maps of the Venice Catacombs. Walk left from the library entrance, taking the lower of the two possible routes until you reach the third set of bookshelves. The book you need is the one on the second row up, right hand end of the rightmost column.

Now get the red cordon and the metal barrier and refer to the Grail Diary. Look at the window in the diary and then head for the corresponding window in the library. If it says "If ye would enter, follow the third to the left" then you must go to the left pillar, read the inscription and look at the third number. Using the metal barrier break the corresponding slab and you fall through to the catacombs.



Make your way to the manhole and climb out of the catacombs and into the restaurant. Go to the two lovers and look at the wine then pick it up. Return to the catacombs and fill the bottle with water from the fountain. Now find the hook located on the skeleton and go to the room with the stuck torch. Use the bottle on the torch and pull it. Now find your way to the bridge and cross into the room facing you. Read the inscriptions and write them down since you need these to make your decisions at the end of the game.

Walk onto the bridge and place the hook onto the wooden plug. Use your whip with the plug and head for the room with the ladder in it. Climb the ladder and



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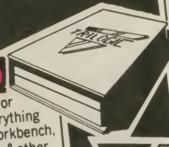

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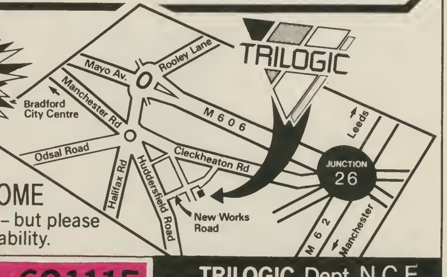

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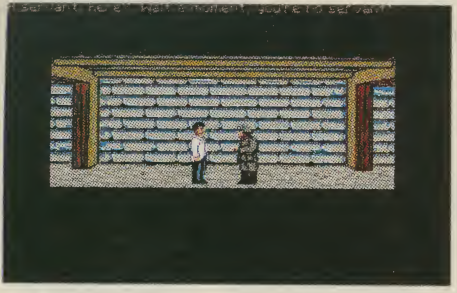


• *Follow the route to success.*

make your way to the room with the fountain of water. Now follow the farthest tunnel and find the room with the machine in it. Use the red cordon on the machine. Now use the wheel and head for the room with the large wooden door.

Consult the Grail diary and alter the three statues until the door opens. Now make your way to the room with the musical skulls in it. Yet again read your diary and play the notes on the skulls in the correct order to open the door. Now find your way to the Knight's casket, open it and look inside before pulling the rusty lock and exiting. Leave the catacombs via the manhole and you're now well on your way to Castle Brunwald.

BURNIN' RUBBER

The qualifying circuit only has right-hand bends so try keeping to the right at all times. The automatic car is easier to drive but the manual car is capable of higher speeds. If you're new to the game start out on automatic and when you're used to the controls, switch to the manual car instead.

ALTERED BEAST

On the title screen press B and option together and you can access a special option screen.

To succeed at level one you need to destroy an especially nasty piece of work. Fire at him using the trigger button A and then dodge his heads by dashing left and right (or shoot left and right using trigger button B), then fire. Repeat this until he eventually dies.

In level two fly towards the baddy until you're just touching the big eye-like thing. Just before it opens up press B. Do this as fast as you can and the level's a doddle.

Level three features a huge dragon. He's equivalent to a hermit crab so is no problem. Press B and simply keep spinning into it. No trouble.

Right, that's the first three levels done, only another two to go. Watch this space in January for part two of the solution to *Altered Beast*...

INTERDICTOR

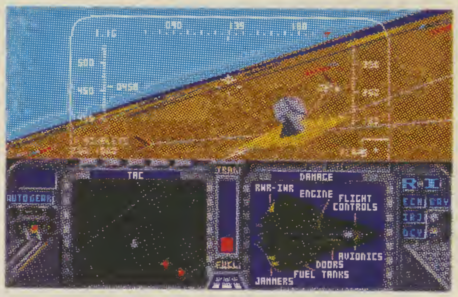
Straight from the mouths of the *Interdictor* programmers come these handy tips which are aimed specifically at flying *Interdictor* but would also help flying any Simis flight sim.

When flying for the first time keep the auto-stabiliser switched on and have your mouse speed set to medium before firing up. This gives you much greater stability. Don't make large mouse movements otherwise you get into a muddle and fall out of the air. Instead, make very gentle, controlled movements.

When you're used to flying with the auto-stabilisers on, turn them off and start trying some clever manouvres.

Practice landing. Don't try to come down too quick. Instead, set yourself up a long way out at 1000ft and with an airspeed of around 200 knots. Hold onto the throttle and bring down the wheels. There's a drag on the undercarriage which tends to wipe your speed down considerably – watch it. As the runway approaches bring the aircraft down to a stall speed – around 120 knots. Keep the nose up and the aircraft drops slowly. As soon as you touchdown, switch off the engines and keep the aircraft stable.

When attacking scenarios take out bridges first if you can. In the early stages you can ignore opposition aircraft. The game gets more clever after runway three or four and here it's imperative that you take out the bridge to stop the trucks coming over. This done, you can then proceed to wipe out the lorry depot and start worrying about everything else that's going on.



• Interdictor: *flight sim tips.*

When attacking anything with surface-to-air missiles, keep under 300ft. There's no need to go fast, give yourself plenty of time to get set up instead. Your optimum speed should be between 250 and 300 mph. This gives you more than enough time to get your target in sight and make your aircraft ready for the attack.

PART TWO COMING SOON...

That's all the tips we have room for in this supplement, but it should be enough to keep you going through the Christmas holiday with your new machine. If you want still more then we'll have part two of our Gamers' Guide tips in the January 5 issue of *New Computer Express* to let you finish off those tricky scenarios.

Until then, have a good Christmas struggling with the alien life forms, malignant Nazis and creatures from another age... ■

DRAGONS BREATH

Here are some extra spells all in their right ingredients, meaning there's no need to spend hours deciphering the books. They are arranged so that the first column is the name of the ingredient, the second is the mixing method, followed by the heating method and the ratio of ingredients.

To give strength to your dragon use:

AYHE	NORM	COOL/HEAT	2
ULIN	MIX	HEAT	4

If you're adventurous, add:

ACRUS	MIX	HEAT	1

To speed your dragon:

AYHE	NORM	COOL/HEAT	1
RASGON	MIX	HEAT	1
MAGIAN	NORM	COOL/HEAT	2

To infuse strength to your dragon's egg:

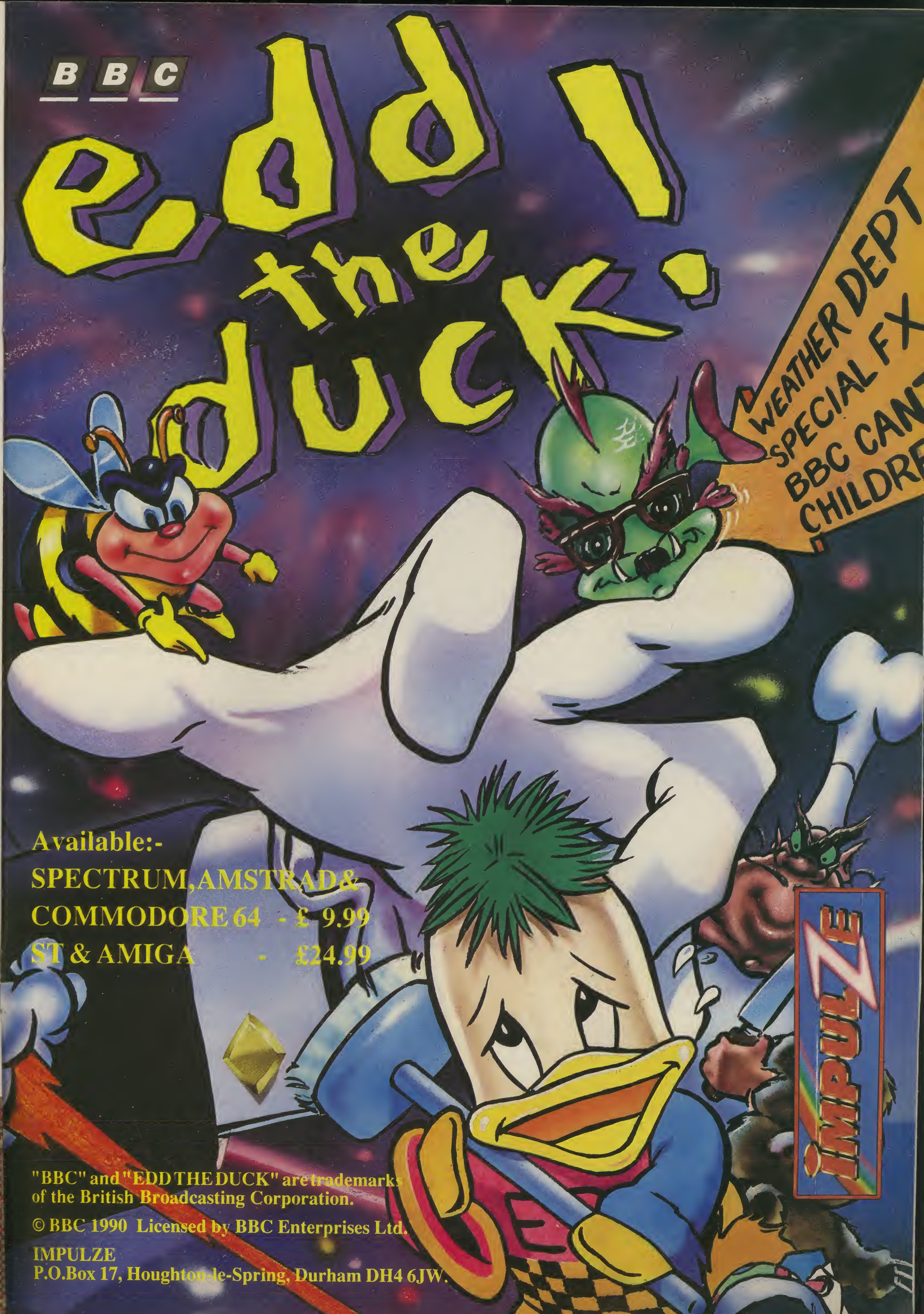
MAGOEM	GROUND	HEAT/COOL	1
ULINMIX	HEAT	4	

To improve egg growth:

CEEOCOR	CUT	HEAT	1
OREGANSE	NORM	–	1
ACRUS	MIX	HEAT	4

To heal your dragon:

RASGON	MIX	HEAT	1
MIONACAL	GROUND	COOL	2
ACRUS	MIX	HEAT	4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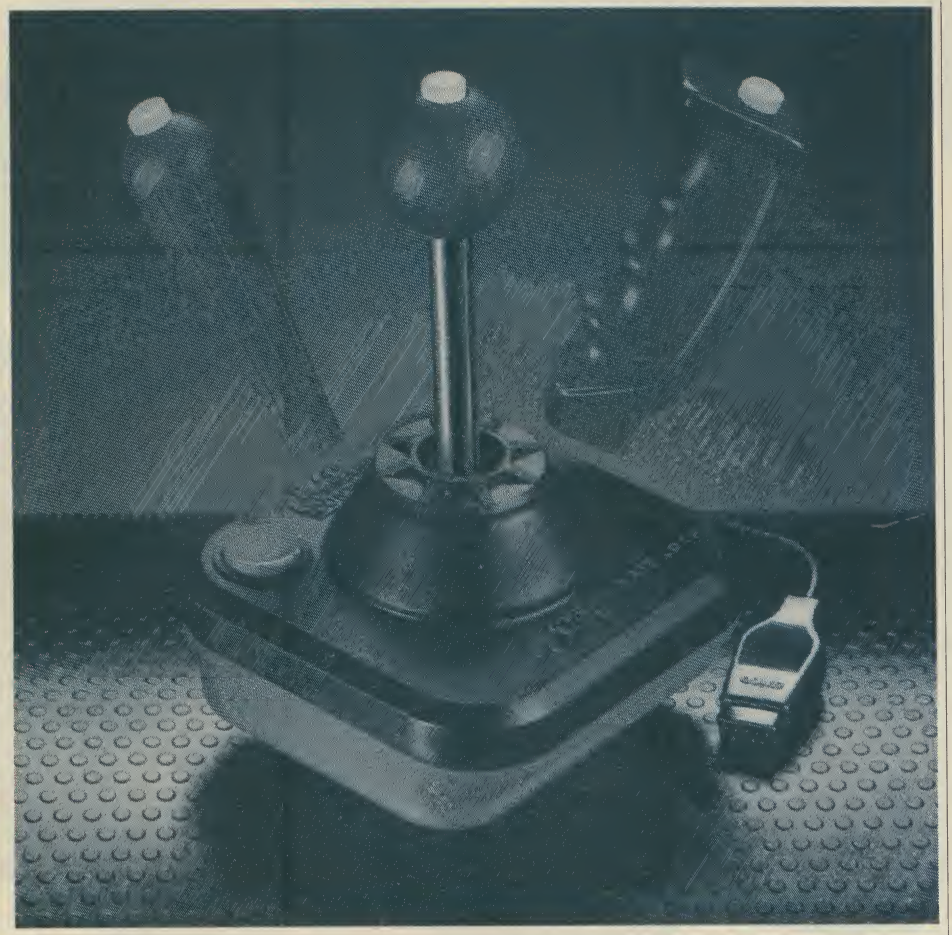
Key: A - 16 Bit (Amiga and ST) compatible; C - Commodore and CPC compatible; S - Spectrum compatible; G - Sega compatible; N - Nintendo compatible

* The black version of this joystick comes with a Spectrum compatible dual lead.



• The Wico Command Control offers you a choice of handles, so whether you prefer a long thin one, one with a ball at the end or a knobbly one you are always kept happy.

SHEER JOY

You can't play games without a controller, but all too often the one supplied isn't up to scratch. Dave Golder investigates the alternatives.

Gamers argue incessantly over what makes a good joystick. Traditionalists favour the Powerplay series, bereft of fancy features, but sturdy and reliable with a large red blob on top to get your mitts around. Others prefer the ergonomically designed, aircraft style joysticks, such as those from Cheetah, sexily crowned with fire buttons you can easily hit with your thumb.

At the end of the day the choice usually has a lot to do with personal preference. But with such a bewildering multitude of sticks on the market, and prices ranging from £4.99 to £49.99, many sticks are obviously promising more than just straightforward aesthetic satisfaction as incentive to buy.

Some of the more expensive sticks offer enticing features like autofire and microswitches. Autofire does exactly what it says and apart from stopping your thumb – or whatever part of your body you usually use to hit the fire button – from dropping off, it also leaves the player time to concentrate of going in the right direction.

This can be useful, but there is a problem with compatibility with the Amstrad CPC, so some sticks, such as Spectravideo's, have a shutdown facility which disables the autofire circuit.

Microswitches make the sticks more responsive and accurate, and can be applied to both firing and directional mechanisms.

Another feature to look out for is suction cups on the base to stop the thing sliding all across the table.

Ergonomically designed sticks are the ones with the ridges designed to fit comfortably in the human fist. These sticks usually have a top mounted fire button which offers some advantages. For example, the gamer can move and fire with just one hand, leaving the other free keep firm hold of the stick if it hasn't got suckers, or press even more buttons for extra fire power if it has.

A problem with these sticks, though, is that the person for whom they're ergonomically designed for invariably has hands ten times larger or smaller than your own!

One final point: most sticks are not compatible with the Spectrum, but interfaces can be bought quite cheaply so that they will work on those machines. Some sticks even come with their own dual leads. ■

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....

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....

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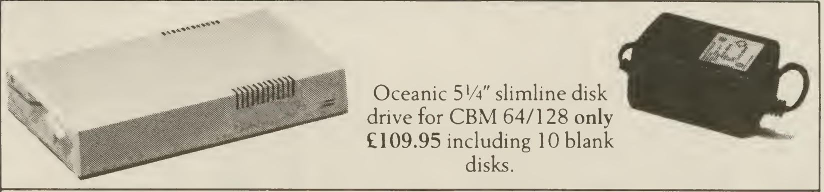

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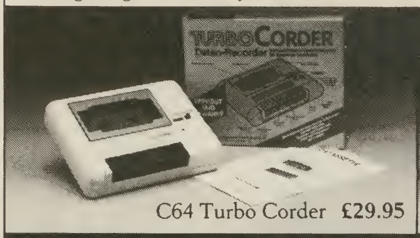

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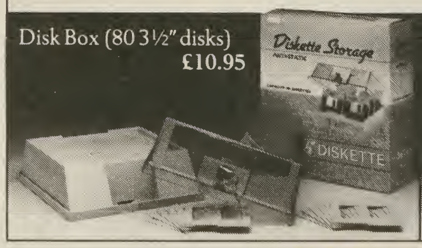

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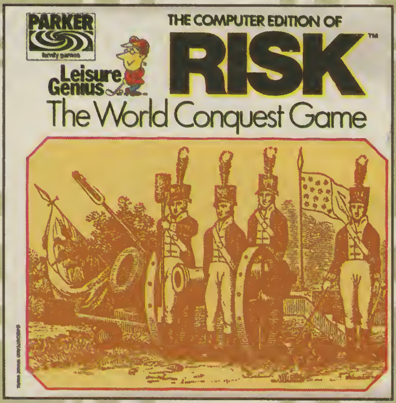
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